cation Library

SCHOOL MANAGEMENT

May 1959

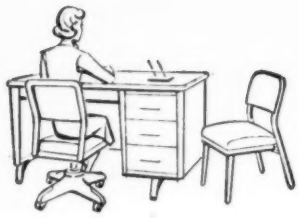
PRACTICAL SOLUTIONS TO SCHOOL MANAGEMENT PROBLEMS

How to hire a PRINCIPAL

YARDSTICKS TO HELP YOU MEASURE YOUR SCHOOL'S SCIENCE PROGRAM

are you getting the BEST RATE on your bonds?

SEE COMPLETE CONTENTS ON PAGE 3



Lightens the load... brightens the day...

for years to come

ASE Furniture and Equipment is the very best you can buy... anywhere. It's built with an eye to the future . . . built to give service for many, many years. It's built with care. Drawers and doors operate smoothly Bonderite coating securely anchors paint to metal assuring a permanent, lustrous finish for years.

ASE furniture is designed for efficiency, too. Makes work a little easier . . . more pleasant. And, of course, beauty of design and color is apparent. There's a wide choice of colors as well as desk top materials and chair upholstery fabrics.

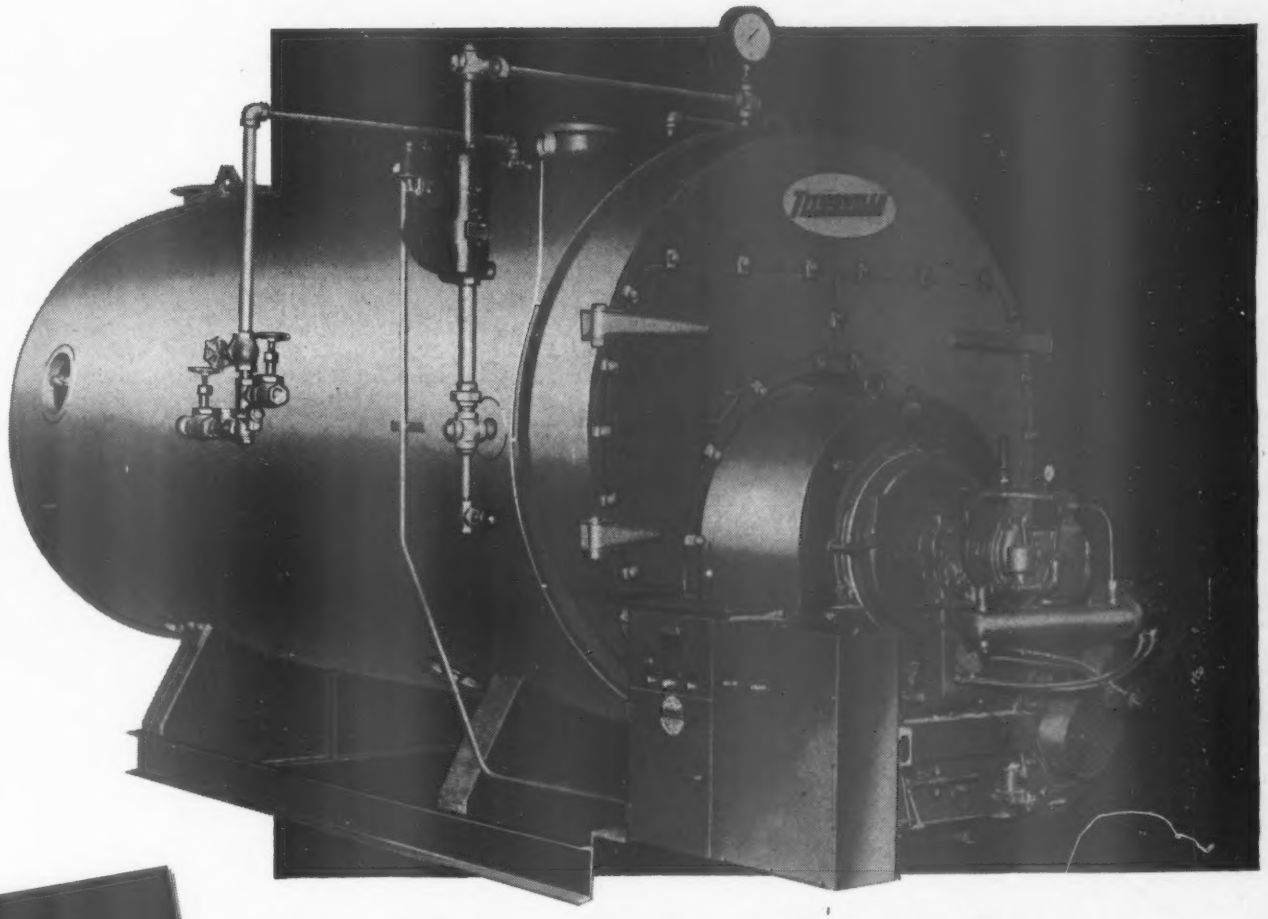
It's good business to specify ASE when you buy school furniture and equipment. It's a long term investment in service and satisfaction.

Write for free literature. Ask for our new catalog. It contains full descriptions, illustrations and specifications. You'll find it helpful in selecting what you need. Meanwhile, see your ASE dealer. There's one near you.

ALL-STEEL EQUIPMENT Inc.
Aurora, Illinois

(Circle number 701 for more information)

NOW... *meet the Titusville* TITAN



Send today for your free copy of the new TITAN Bulletin B-3240 . . . contains full data on the TITAN Unit line.

3-PASS UNIT

with complete wet back

The TITAN 3-Pass Unit brings you today's highest development in mechanical and thermal efficiency for exacting power and heating applications. Compact design in every size joins with TITAN's all-wet-back construction, water-cooled rear combustion chamber and modern 3-pass heat transfer to make this unit *your first consideration* when boilers are up for discussion. Let us consult with you, now!

A Division of

Struthers Wells

TITUSVILLE, PENNSYLVANIA

Manufacturers of A Complete Line of Boilers for Every Heating and Power Requirement

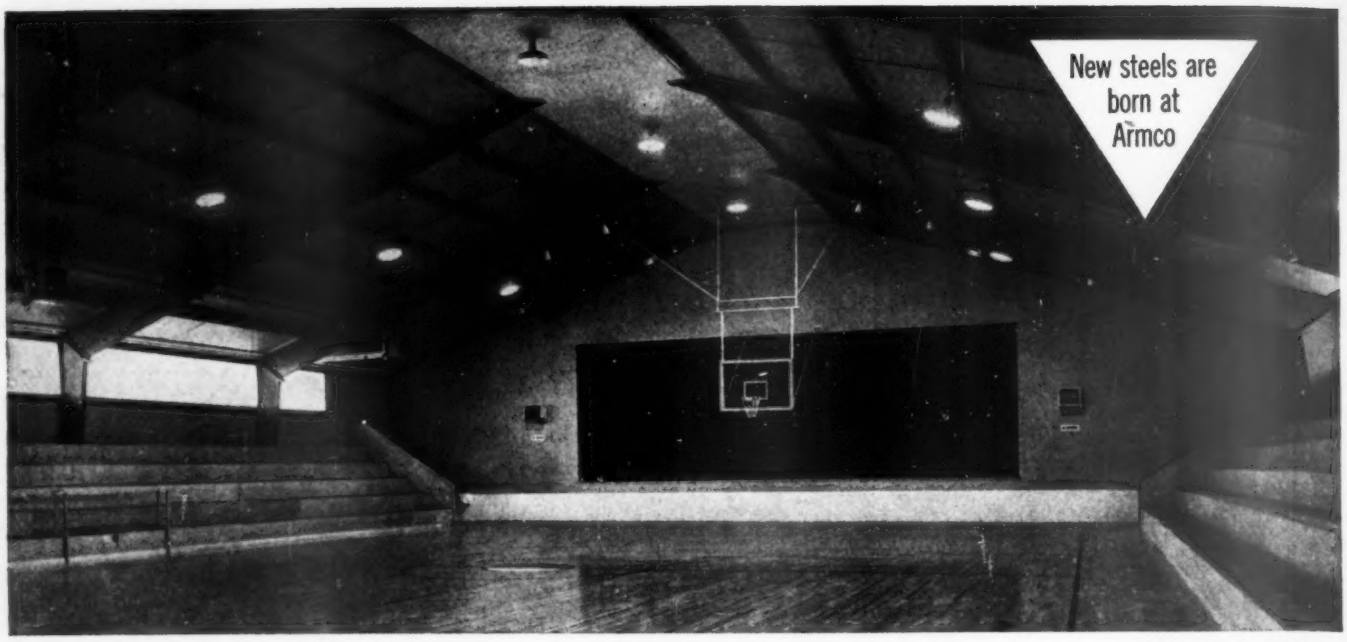
Plants at Titusville, Pa. and Warren, Pa.

Offices in Principal Cities

THE TITUSVILLE IRON WORKS CO.

BOILER DIVISION: BOILERS for Power and Heat . . . High and Low Pressure . . . Water Tube . . . Fire Tube . . . Package Units. **PROCESSING EQUIPMENT DIVISION:** Crystallizers . . . Direct Fired Heaters . . . Evaporators . . . Heat Exchangers . . . Mixing and Blending Units . . . Quick Opening Doors . . . Special Carbon and Alloy Processing Vessels . . . Synthesis Converters. **FORGE DIVISION:** Crankshafts . . . Pressure Vessels . . . Hydraulic Cylinders . . . Shafting . . . Straightening and Back-up Rolls

(Circle number 746 for more information)



Clear, clean interior of new gymnasium in rigid frame Armco Steel Building.

Armco Steel Buildings...

Best Way to Build All These School Buildings

Gymnasium, cafeteria, office, classroom, bus garage—for all these and other school building jobs, Armco Steel Buildings are a better way to build. Here's why: The Armco Building Method gives you the variety and flexibility needed for such special requirements as the 100-foot clear-span width for an auditorium, or big doors to provide ample clearance for buses. In short, Armco Steel Buildings can be tailored for *your* needs. Yet the cost is low! For complete facts—and help with your own building program, use the handy coupon. Armco Drainage & Metal Products Inc., 5699 Curtis Street, Middletown, Ohio.

Send information about Armco Steel Buildings for the following use:

_____

Size_____ Expected "move-in" date_____

Name_____

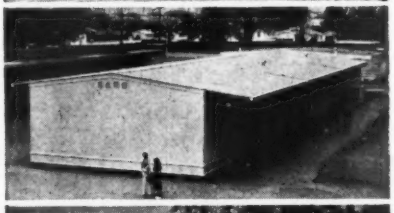
Title_____

Organization_____

Street_____

City_____ Zone____ State_____

Efficient school bus garage.



Compact, portable classrooms.

Permanent classroom buildings.

Practical, comfortable interiors for offices and classrooms.

ARMCO DRAINAGE & METAL PRODUCTS

Subsidiary of ARMCO STEEL CORPORATION

OTHER SUBSIDIARIES AND DIVISIONS: Armco Division • Sheffield Division • The National Supply Company
The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products

(Circle number 706 for more information)

Vol. 3 No. 5

S|M

Contents for May 1959

Features

Yardsticks to help you measure your school's science program 42
What is a proper science program? In this article SCHOOL MANAGEMENT *brings together expert opinion on what is needed in the way of curriculum, staff and facilities.*

How to select a principal 47
The building principal is the key man in a good school program. Here is what one district is doing to guarantee that it gets the best possible man for the job.

Summer's the time for a remedial reading program 52
Cleveland has had spectacular results with its summer course for retarded readers. In six weeks, slow readers showed a median reading gain of six months.

Are you getting the best rate on your bonds? 55
This district was told it would have to pay 4½% on its new issue. Here's how it knocked the rate down—and saved $122,000 in interest.

Explorations in education 59
Reports of new programs concerned with accelerating mathematics in high school, an elementary school reading plan and a pre-first grade classroom.

Short Reports

An inexpensive way to handle noon-time transportation 26
Here's an idea any district could use to cut transportation costs.

How we relighted our old schools 65
Poor lighting was making these schools obsolete before their time.

Boot training for new principals 91
Here's how one district orientates its new principals, before school opens.

Departments

Letters to the editor 13
A sampling of correspondence

Food clinic 16
Answers to school feeding problems

Things your public ought to know 21
On the costs of education

News of the schools 29
A digest of current happenings

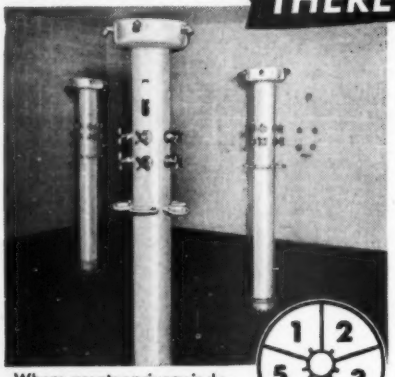
Press releases 99
News from business firms serving your schools

Reader service section 104

AT THE QUINCY, ILL. SENIOR HIGH SCHOOL,

(Architects: Charles F. Behrensmeyer and Horn)

THERE ARE...



Where greater privacy is desired, the same Bradley Column is used but with stall separating partitions and curtains.

8 BRADLEY COLUMN SHOWERS

Three of the eight Column Showers shown have five shower heads. Each bather has individual control of water volume and temperature. One set of piping connections (hot and cold water and drain) suffices for these five-person Showers—a saving of 80 percent. Made in 6′, 5′6″, and 5′ heights.

This shows one of the semi-circular wall type Washfountains as used in work shop.

5 BRADLEY WASHFOUNTAINS

54″ Semi-Circular

Students like sanitary Bradleys with their foot-control and self-flushing big bowls—maximum sanitation—maximum wash facilities in least space.

Twenty inches of rim space is equivalent to one lavatory—each semi-circular 54″ Washfountain serves 4 to 5 simultaneously, and the full circular models, 8 to 10.

Duo-Washfountains represent the latest in sanitary washing facilities.

23 BRADLEY DUO-WASHFOUNTAINS

Located throughout the various washrooms, cafeterias, laboratories, are 23 stainless steel two-person Duo-Washfountains. They provide for foot-control of the tempered water coming from the central sprayhead. No faucets to touch or maintain, no chance of spreading infections, no chance of wasting water because supply is cut off immediately foot is removed from the foot-treadle.

Because bowl is self-flushing, there is never any unsanitary soil residue of previous users.

All Bradley products are illustrated and described in full detail in Catalog 5601. Write us for a free copy—BRADLEY WASHFOUNTAIN CO., 2343 W. Michigan St., Milwaukee 1, Wis.

Write for Cat. 5601

BRADLEY *washfountains and multi-person showers*

(Distributed by Plumbing Wholesalers)

(Circle number 754 for more information)

SCHOOL MANAGEMENT

22 West Putnam Ave., Greenwich, Conn.

Publisher Jerome W. Harris — **President** William S. Kline

EDITORIAL STAFF

Editor: Jerome W. Harris
Managing Editor: Paul Abramson
Departments Editor: Alice Honore Drew
Art Director: Laurence Lustig
Assistant Editors: Edith Hulley, Kent McKamy
Production Manager: Joan Longnecker
Advertising Production: Nelda Green

BUSINESS STAFF

Business Manager: Edwin D. Kline
Circulation: A. A. Novy, manager; Marie M. LaGuardia
Sales Promotion Mgr.: Frederick L. Bunting

Advertising Offices

New York 141 East 44th Street, MU 7-0583 Director of sales development: Gil Hand—Joseph Hanson—Harrison M. Rollins—Sherman P. Laire—Donald R. Buckner

Chicago 612 North Michigan Avenue, Del 7-0112 Western Division Manager: William S. Hutchings Western Advertising Manager: Alfred A. Spelbrink—John Hynes

Los Angeles The Robert W. Walker Co., 730 South Western Avenue, Dunkirk 7-4388

San Francisco The Robert W. Walker Co., 57 Post Street, Sutter 1-5568

Houston Ralph Runnels, 5210 Morningside Drive, Jackson 4-6633

EDUCATIONAL PRESS ASSOCIATION OF AMERICA

A publication of SCHOOL MANAGEMENT MAGAZINES, INC.
22 West Putnam Avenue, Greenwich, Conn.
Townsend 9-8585

President, W. S. Kline; Executive Vice President, J. W. Harris; Secretary-Treasurer, E. D. Kline.

SUBSCRIPTIONS: In United States and Possessions, one year $8.00. Canada, one year $9.00. Foreign subscriptions $12.00. Single copies $1.00. When possible, tearsheets of articles will be provided at a cost of $.50 for each article requested, to cover costs of handling.

GROUP SUBSCRIPTIONS: when ordered in groups of three or more, subscriptions are $6.00 each. **Note:** please give title and address for each subscriber. Board members generally prefer to receive their copies at home address.

BPA **Member of Business Publications Audit**

Copyright 1959 by School Managment Magazines, Inc. Published monthly by School Management Magazines Inc., 22 West Putnam Ave., Greenwich, Conn.

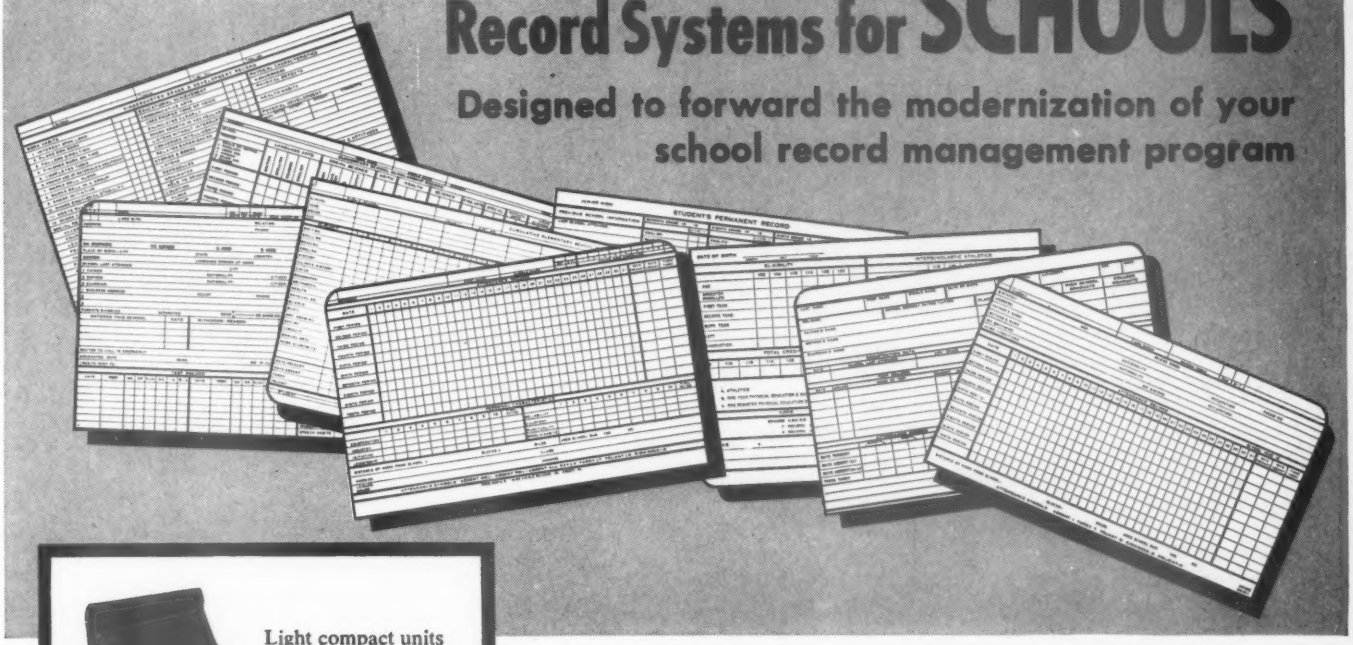
CHANGE OF ADDRESS: To insure continuous service, send your new address (and moving date) 45 days before moving.

Include old address as it appeared on previous issues (if possible send label from magazine). Do not depend on the post office to forward either the change of address or your magazines.

ACME VISIBLE

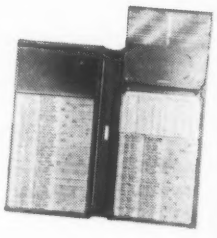
Record Systems for SCHOOLS

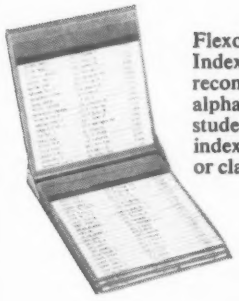
Designed to forward the modernization of your school record management program



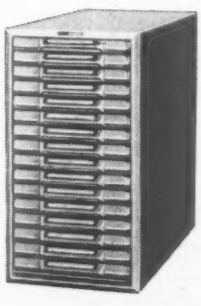
Light compact units to hold 38 or 51 cards. For handling of student records in the classroom.

Ideal for cumulative grades taken from classroom records, combined with enrollment and vital statistic records.





Flexoline Insite Indexes are recommended for alphabetical lists of students and cross index to home room or class.



Acme Cabinets with varying number of trays; capacities from 469 to 2528 records. Designed to suit your requirements for management control.

Forms available for these records:

ELEMENTARY SCHOOLS
- Kindergarten Development
- Teacher's Classroom Scholarship and Attendance
- Monthly and Cumulative Attendance Summary and Report
- Cumulative Student Grade and Enrollment

JUNIOR HIGH SCHOOLS
- Student's Permanent History Record

SENIOR HIGH SCHOOLS
- Student's Permanent History Record
- Attendance
- Program Record
- Physical Education Department Record

TEACHERS
- Teacher's Accumulative Service Record
- Teacher's Accumulated Leave Record
- Teacher's Payroll

MISCELLANEOUS
- Family Census
- Book Rental
- Supply and Cafeteria Inventory Control
- Purchase
- Property
- Visual Aids Film Booking Schedule

FUNDS EXPENDITURE BUDGET CONTROL
- Executive Appropriation and Allotment Ledger

Acme Visible record systems provide the utmost in simplicity, time-saving and control. Your experienced Acme representative will gladly recommend the type of equipment best suited to your needs. Call him today, or mail coupon for illustrated literature.

ACME VISIBLE RECORDS, INC.

CROZET, VIRGINIA

Offices and Representatives in Principal Cities

MAIL COUPON TODAY!

P-559

Send us literature showing school record forms.

We are interested in Acme Visible equipment for_____ records.
kind of record

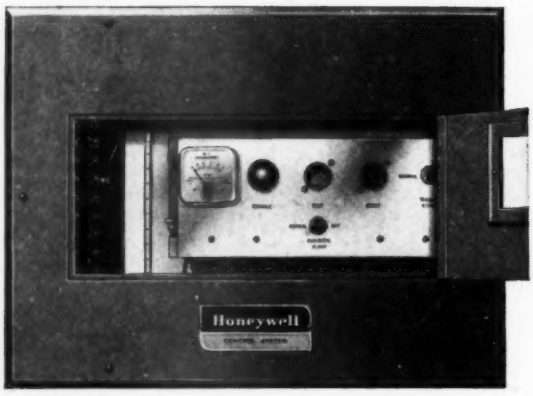
School_____

Attention_____

City_____ Zone_____ State_____

(Circle number 761 for more information)

Announcing the complete new line of HONEYWELL AUTOMATIC FIRE ALARM SYSTEMS



W247 Panel for larger schools. Offers all the latest detection and alarm features necessary for safe evacuation. For the ultimate in safety, this panel continuously checks itself and gives warning by light and buzzer if either the alarm or detection wiring becomes faulty. The panel features large bell capacity—up to 5 bell circuits operating a total of up to 50 bells. Choose from 3 types of alarm: *continuous ringing* (bells ring continuously to sound alarm), *master coded* (bells ring in code to distinguish fire alarm from other bells in building), *selective coded* (bells ring in code to identify fire location).

W237 Panel for smaller schools, gives the utmost in fire alarm reliability. The system is available with standby battery operation so that the alarm will sound even during a power interruption. As an added safety measure, this panel checks itself, and gives an alarm by light and buzzer if there is a break or fault in either the pull box or automatic detector wiring. This system is so foolproof that it can sound the fire alarm even with a break or fault in the detector wiring. The panel features two independent bell circuits. A system of numbered lights quickly identifies location of fire.

NOW YOU can give your school day and night fire protection with Honeywell's complete new line of automatic fire detection and signaling equipment.

Honeywell's fire alarm systems can signal the location of fire immediately, saving precious minutes. And to give even greater fire protection, all Honeywell fire alarm systems can be connected to sound the alarm at both the school and the local fire department. All Honeywell fire alarm panels have U.L. approval.

Honeywell fire alarm panels provide test buttons for ease in testing the system and conducting fire drills. The doors of these panels may be locked to prevent tampering.

Honeywell fire alarm systems also provide additional benefits. During installation, experienced Honeywell supervisors are on hand to assist the contractor and check the finished job. Then, factory-trained Honeywell men provide free service for one year. Honeywell also offers a low-cost maintenance plan that includes regular inspections, prompt service. It's available through any one of 112 Honeywell offices. There's one near you.

For additional information, call your nearest Honeywell office, or write: Minneapolis-Honeywell, Department SM-5-57, Minneapolis 8, Minnesota.

Honeywell

H HONEYWELL *First in Control*

(Circle number 725 for more information)

SMALL-GROUP TRANSPORTATION REVOLUTIONIZED . . .

DIVCO-WAYNE ANNOUNCES WORLD'S FIRST AND ONLY

HEAVY-DUTY BANTAM TRANSITS . .

VERSATILE . . . MOST ECONOMICA

FOR 16 TO 25 STUDENTS

COACHLINE CUSTOM

COACHLINE PANORAMIC

THE DIVCO-WAYNE *Coachline* BANTAM TRANSIT

Now for the first time schools can have big transit bus styling and safety with small bus maneuverability and economy! The new Bantam Transits, exclusive with Divco-Wayne, are shorter, lower and about a foot less wide than other transit buses. Wasted space is eliminated, yet each of the five models has an amazingly spacious interior with full 6′2″ headroom. From bumper to bumper, Coachline Transits are expressly designed for heavy-duty service. Rugged transit chassis and powerful performance-proved engine thrive on stop-start operations and are engineered to outlast ordinary bus chassis 2 to 1. Advanced styling, visibility and comfort. Both body and chassis made and backed by Divco-Wayne.

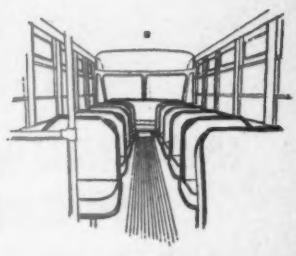
IDEAL FOR A WIDE VARIETY OF SCHOOL USES

Public and private schools, colleges, universities, day camps, nurseries, all will find it ideal for transportation to and from school, for field trips, for team use—wherever safe, economical small-group transportation is desired.

2 DISTINCTIVE NEW SERIES
Five Models to Meet Every Need

Coachline Panoramic (Rounded Rear End)—available in 2 lengths, wit side emergency door. Coachline Custom (Straight Line Design)—availabl in 3 lengths, with rear emergency door. Student seating capacities, 16 to 2

Large underfloor luggage compartments (at both sides) and full-width rear compartment are optional.



Spacious comfort-planned interiors. 6′-2 headroom, heavily padded seats and wid aisles. Power-operated door contr standard.

For full information, contact your Divco or Wayne Distributor, or write to Divco-Wayne Corporation

D-W
DIVCO-WAYNE CORPORATION

DIVCO-WAYNE CORPORATION

RICHMOND, INDIANA
DETROIT, MICHIGAN

INDIVIDUAL DIXIE* PAPER SERVICE IS USED BUT ONCE... A REAL DETERRENT IN THE PATH OF CONTAGION!

Colorful, attractive Dixie Matched Food Service makes every meal festive—appetizing. Yet there's never a question about cleanliness or the danger of cross-infection because of faulty dishwashing. Specially processed for superior food service, this Dixie Service for Schools is available in a complete range of sizes for every portioning need. Today, write for samples and information about this attractive, single-use

DIXIE MATCHED FOOD SERVICE

COSTS NO MORE TO USE!

EVERY DAY, MORE AND MORE SCHOOLS ARE PROVING THE ECONOMY AND EFFICIENCY OF DIXIE SERVICE!

Dishwashing is almost eliminated. Clean-up takes only minutes instead of hours. The small cost is more than offset by dishwashing savings. Hard-to-get help isn't wasted on menial tasks. Close-nesting Dixie Service can be stored in less than half the space. And you need never worry about breakage and high replacement costs. Trays are light and easy to carry—the line moves along more swiftly. Ask us about the actual experiences of other schools.

DIXIE CUPS ARE PRODUCTS OF AMERICAN CAN COMPANY

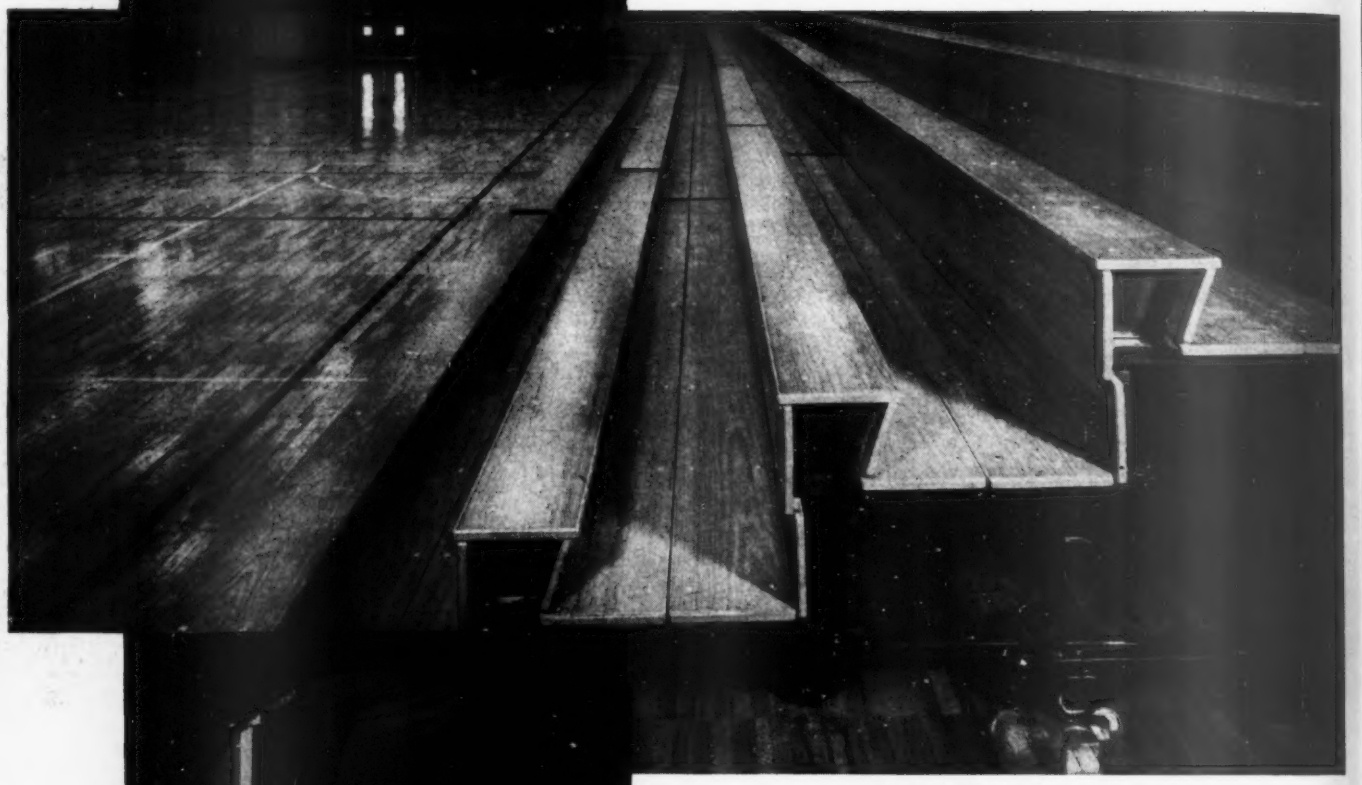
Dixie Cup Division of American Can Company, Easton, Pa., Chicago, Ill., Darlington, S. C., Fort Smith, Ark., Anaheim, Cal., Lexington, Ky., Brampton, Ontario, Can. ®"Dixie" is a registered trade mark.

(Circle number 712 for more information)

Specify

CLOSED DECK ROLL-OUT GYM SEATS

They're Designed for Complete Safety



Showalter High School, Chester, Penna.
Photos by Cortlandt V. D. Hubbard

There are 16" of safe walkway in this Hussey Roll-Out. Even the size 12½ shoes (at the left) are completely supported with ample room for comfort.

More important—note the absolute security of the woman's feet. She can afford to relax. She knows she can leap to her feet to cheer, or walk along the row, without first having to check her footing. There are no holes into which her toes or high heels can slip.

Hussey gym seat footboards are not catwalks suspended in space. They are an integral part of Hussey's Closed Deck design that provides complete spectator comfort and safety.

BE FUSSY — SPECIFY HUSSEY

HUSSEY MANUFACTURING CO., INC.
595 Railroad St. North Berwick, Maine

(Circle number 720 for more information)

coolite glass . . .

architect's choice for better *Daylighting*

Architect: Harstern, Louis and Henry, A. I. A.; Louisville, Ky.

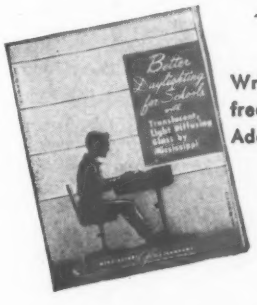
Glazing: Pittsburg Plate Glass Co., Louisville, Ky.

Softened Illumination Diffused Deep Into Interiors Helps Make Classrooms Bright Without Discomfort

Classrooms in the Goldsmith Lane School are bright with Coolite-conditioned daylight by architect's studied specifications. Luxlite Coolite, heat absorbing and glare reducing glass by Mississippi, was installed in the upper three rows of sash to flood interiors with softened, eye-easy, natural illumination without discomfort of solar heat or harmful glare. Rooms seem larger and friendlier. The entire atmosphere of the classrooms is more conducive to study. Students see better, feel better, work better, under Coolite-conditioned daylighting.

These are among the carefully considered reasons that motivate many architects to specify Coolite for their outstanding schools, as well as in their other designs. And these are good reasons why you, too, should specify Coolite when you build or remodel *your* schools.

Mississippi maintains an experimental school building on factory grounds for the study of daylighting. Take advantage of the company's wide experience. It's technicians are ready to help you with every daylighting problem.



Write today for free catalog. Address Dept. 17.

MISSISSIPPI GLASS COMPANY

88 Angelica St. • St. Louis 7, Missouri

NEW YORK • CHICAGO • FULLERTON, CALIFORNIA

WORLD'S LARGEST MANUFACTURER OF ROLLED, FIGURED AND WIRED GLASS

(Circle number 727 for more information)

S. AUERBACH A.I.A.

build a better environment for learning . . . with the compatibility of **WOOD**

Efficient use of space is only one factor of good school design. Still more important is the building's atmosphere . . . a friendly, homelike climate in which both teachers and children can be most responsive and relaxed. To create this compatible setting, for instruction and study, there's nothing in the world like *wood.*

Wood's compatibility has an added meaning, too. It blends beautifully with other modern materials, any color scheme. So, whether you build an all-wood one-story structure . . . or use wood in paneling, flooring, furniture, cabinetwork for warm, friendly interiors . . . you build the finest school a community's money can buy.

For more information on the use of wood in schools, write to:
NATIONAL LUMBER MANUFACTURERS ASSOCIATION
Wood Information Center, 1319 18th St., N.W., Washington 6, D. C.

nlma

Live, Work, Build Better with **Wood**

(Circle number 730 for more information)

LETTERS

Ability grouping

SIR: I have just read the article "How to sell ability grouping to your community," (*SM, March '59*), and I get the idea that it is all right to cheat the children and parents so long as you make them feel good about it.

Public relations is a very important part of school administration, but one of the first principles of that subject is to be honest in intent. Can you really sell ability grouping, especially in the elementary school, without violating that principle?

I enjoy reading your magazine, but I just happen to disagree with this article.

RANDELL SIMPSON
SUPERINTENDENT
KELLER, TEX.

■ Superintendent Keller questions the value of ability grouping. But the importance of publicity on any school action still rings true. Whenever a school district does embark on a controversial project, it's good practice to put its best foot forward in the community. ED.

Bethpage story

SIR: As coordinator for the investigation made by the New York State Teachers Association and the Defense Commission of the National Education Association in Bethpage, N. Y., I compliment you upon the article on the Bethpage story, (*SM, Feb. '59*). The article does just what needs to be done by a magazine in pointing up the values to be gained from our investigations.

VIRGINIA KINNAIRD
ASSOCIATE SECRETARY
COMMISSION FOR THE DEFENSE OF DEMOCRACY THROUGH EDUCATION
NATIONAL EDUCATION ASSOCIATION
WASHINGTON, D. C.

More about Reader's Digest

SIR: Recently, our school superintendent, H. J. Bothwell, appointed me as propaganda chairman for our coming $3 million bond election for the purpose of building a badly needed high school. A few years ago, we built three new elementary schools and many people said there were too many frills and, actually, our building costs per square foot were low.

Your SCHOOL MANAGEMENT magazine is one I keep for reference. After looking through several copies, I came to the issue in which you had published a copy of the letter from Carl B. Munck to the *Reader's Digest* (*SM, Nov. '58*). It was exactly what I was looking for. In your editor's note, you said you felt it might be of some value to a community. Mr. Bothwell included some parts of it in his speech to a PTA group and handed a propaganda piece I wrote, based on the letter, to each person. It was well received and that night we did not have the usual question, which we had come to expect—"Why do schools have so many frills?" Thank you for the many times your magazine has helped us with a problem.

(MRS.) EUNICE DESAUTELLE
ADMINISTRATIVE ASSISTANT
MARQUETTE, MICH.

Lunch ticket vs. cash

SIR: In reference to your question: Should the children pay for their meals with cash or tickets?, (*SM, March '59*), I just wish that at some time in the near future you would compare the values of children paying *cash* for their lunches and the value of the cash register for adequate control of funds received as well as customer control and count control of all items sold, vs. lunch tickets.

Here are a few pros for cash payment of lunches:

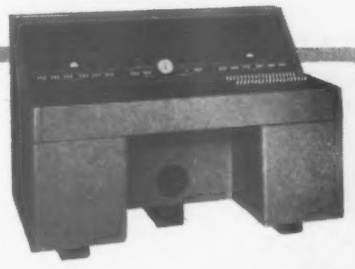
- Child learns money value and count of money.
- Trains child to be responsible.
- Payment of lunches in advance puts burden on office staff and faculty.
- Candy should not be sold in cafeteria so this offers no conflict.
- Soft drinks likewise should not be in the school building.
- Tickets lead to rebating money when child is not in school. With cash register all funds are tabulated daily.
- Cash registers with counter system can give an accurate account of items served and sold for that day.
- Auditors prefer register tape against hand bookkeeping for accounts.
- Meal or lunch count can be ob-

designed to stay **modern** for years!

Rauland

central control sound systems

RAULAND School Sound Systems are unsurpassed for versatility, rugged performance and value. They perform every conceivable communications function for administrative control, educational program distribution and 2-way communication. Here, truly, is the ultimate in budget-minded School Sound, designed and built to stay modern for years.



your choice of every desirable feature and program facility

RAULAND Central Control Sound Systems are available to fit the exact needs and budget of your school. Available features include:

FM-AM Radio—selects any radio program on FM or AM for distribution to any or all rooms

Phonograph—distributes phono program (transcription player or record changer); also available for use with tape recorder

Microphones—selects and distributes programs from multiple microphone locations

Intercom—permits 2-way conversation with any or all rooms

Special Features—Emergency Switch, all-call facility, program clock, monitor speaker controls, etc.

RAULAND Systems are available with capacity up to 160 classrooms. RAULAND Public Address equipment is also available for athletic field coverage.

RAULAND-BORG CORPORATION
Pioneers in School Sound

WRITE FOR DETAILS

Rauland-Borg Corporation
3535-T Addison St., Chicago 18, Ill.

☐ Send full details on all RAULAND School Sound Systems.

We have _____ classrooms.

Name _____

School _____

Address _____

City _____ Zone _____ State _____

(Circle number 736 for more information)

tained on absentee list rendered to the office and called to the cafeteria manager.

- Payment for lunch starts child on a weekly budget.
- Cashier should be at the end of the line as additional milk and homemade desserts should be offered with the lunch program.
- The cashier can also discipline the cafeteria line when no teacher is present in the room.

If a district is contemplating a school building program it is essential for all sides of this question to be explored to their utmost before a commitment is made.

JANET M. FAKE
SUPERVISOR OF CAFETERIAS
WHITE PLAINS, N. Y.

Sick leave

SIR: Being from New Jersey, I naturally found the article "How to strengthen the management of your schools," (*SM, March '59*), very interesting. It is good reading for any individual connected with the public schools. However, in my opinion the writer of the article is unaware of the fact that New Jersey has a much better law concerning sick leave than what a reader would assume from the last example in column two on page 96.

Our state law grants 10 days sick leave per year to each teacher and it further provides that any unused sick leave is cumulative indefinitely. Thus a teacher automatically would have 50 days in five years or 70 days in seven years if he had taught that long in a system and had had excellent health. Neither the board or the superintendent can do anything about this. Of course a local board may institute a more *liberal* policy if in its judgment the circumstances in a particular case warrant.

Since your magazine has such a wide circulation it is unfortunate that this illustration was used since it does not do justice to what the New Jersey teachers think is the best sick leave regulation in the nation.

GEORGE M. DARE
SUPERINTENDENT
BORDENTOWN, N. J.

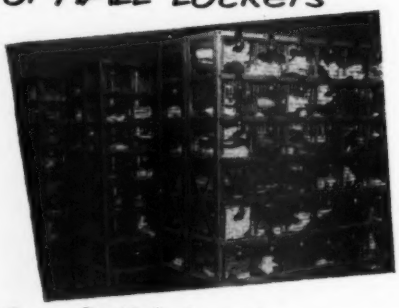
Correspondence

The editors attempt to print each month a representative sampling of letters commenting on articles in SCHOOL MANAGEMENT and on school problems in general. Please address all correspondence to The Editor, SCHOOL MANAGEMENT, 22 W. Putnam Ave., Greenwich, Conn.

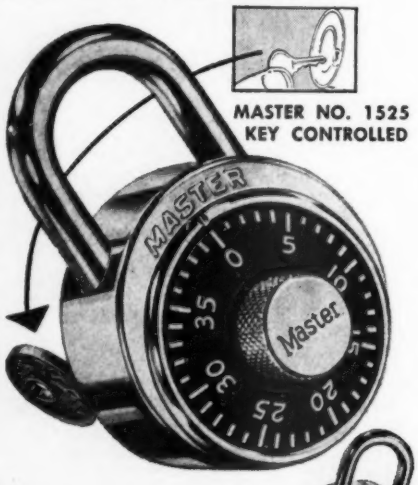
Master
COMBINATION PADLOCKS

▶ LOWER INITIAL COST
▶ NO MAINTENANCE COST

for HALL Lockers



for GYM Lockers



Master Combination Padlocks are not built-in — slamming or jarring of locker doors cannot upset their locking mechanism! Double-wall construction — stainless steel outer case — heavy-wrought steel inner case. Self-locking, automatically disarranging tumblers —hardened locking latch.

Write for free sample and A.I.A. folder

Master Padlocks
NO. 1 IN AMERICA'S SCHOOLS

Master Lock Company, Milwaukee 45, Wis.
World's Largest Padlock Manufacturers

(Circle number 723 for more information)

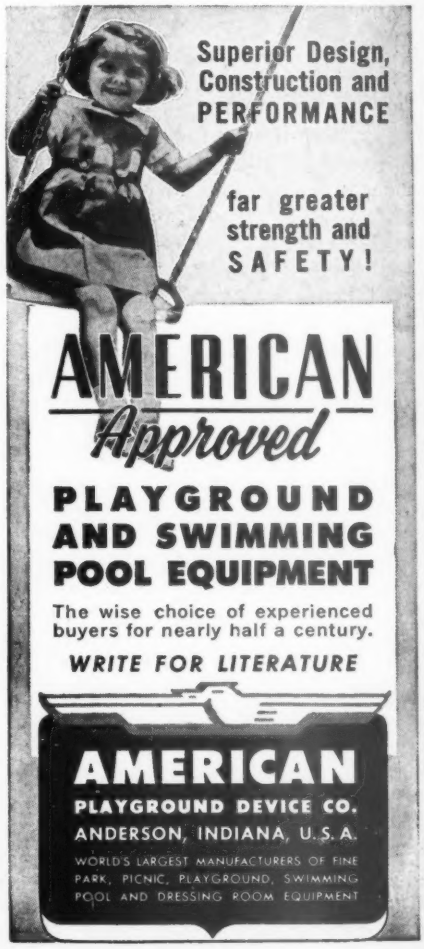
P-S-S-T-!

LOOK OVER THERE

It's a suggestion that will help make your school look a lot better —with a lot less work and a lot less cost.

After you have read it, why not tear out the page and pass it on to the man responsible for floor care.

You'll both be glad you did.


Superior Design, Construction and PERFORMANCE
far greater strength and SAFETY!
AMERICAN
Approved
PLAYGROUND AND SWIMMING POOL EQUIPMENT
The wise choice of experienced buyers for nearly half a century.
WRITE FOR LITERATURE
AMERICAN
PLAYGROUND DEVICE CO.
ANDERSON, INDIANA, U.S.A.
WORLD'S LARGEST MANUFACTURERS OF FINE PARK, PICNIC, PLAYGROUND, SWIMMING POOL AND DRESSING ROOM EQUIPMENT

(Circle number 753 for more information)

HOORAY!

It's wonderful!
It's marvelous!
It's amazing!
It's magic!

Calm down, man. Nothing you could possibly use on your floor is that good.

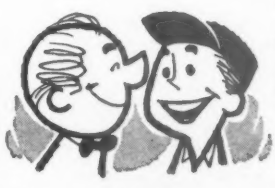
Oh, no? I guess you haven't heard about HOLCOMB's *Wax Stripper . . .*

You mean that **new wax stripper** with those super active, fast working chemicals that penetrate and soften and emulsify those built-up layers of old wax on the floor?

Yeah! Melts 'em down like butter in a hot skillet!

Comes in powder form and it only takes a little bit in a lot of water to do a "he-man size" wax stripping job, right now.

Doesn't get all sudsy, either. So it's easy to mop up.



Right! And powerful as it is, it's absolutely safe for floors. Won't soften 'em . . . bleed the colors . . . or cause fading.

Safe on my hands, too . . . this Holcomb Wax Stripper really does the job! Holcomb is the same outfit which makes that g-o-o-o-d wax I'm putting on these floors as soon as they're dry.

* * *

Somebody was bound to make a *wax stripper* as good as this: fast acting and free rinsing . . . leaving surfaces clean and free of film . . . saving time and money. And it was no accident that it was Holcomb—with the largest and best equipped research laboratory of its kind, anywhere.

Ask your Holcombman to show you how Holcomb WAX STRIPPER works. In minutes he will demonstrate how you can save hours of tedious, costly work—with better results at less cost.

WAX STRIPPER
is one of a complete line of
Scientific Cleaning Materials
by HOLCOMB

J. I. HOLCOMB MFG. CO., INC. · 1601 BARTH AVENUE · INDIANAPOLIS, INDIANA
Hackensack · Dallas · Los Angeles · Toronto

(Circle number 717 for more information)

$500 MILLION embezzled every year!

ARE YOU PROVIDING BUSINESSLIKE PROTECTION FOR YOUR SCHOOL FUNDS?

The F.B.I. calculates that $500 million is embezzled each year—more than is stolen by all the nation's burglars, pickpockets, armed robbers and car thieves together — *and records prove that schools are exposed to this danger just like any business.*

The only realistic way to make sure your school funds and property are safe is by blanket bonding *all* school personnel who are responsible for handling funds—even students. Ætna Casualty's new *School System Blanket Bonds* are specifically designed to fit the needs of all school organizations, large or small. Get the facts now.

Write for free booklet on *Blanket Bonding For School Systems*

Ætna Casualty and Surety Company
Dept. B-2(M), Hartford 15, Connecticut

Kindly send me a copy of your booklet "Safeguarding School Funds and Property."

Name_____

Address_____

City_____

State_____

ÆTNA CASUALTY AND SURETY COMPANY
Affiliated with
ÆTNA LIFE INSURANCE COMPANY
Hartford 15, Connecticut

(Circle number 700 for more information)

FOOD CLINIC

Richard Flambert answers your feeding questions

QUESTION: We are planning to build an elementary school which will have an enrollment of approximately 800 children from the first through the sixth grade. How large should our cafeteria be? How many people should work in it? We are not interested in a central kitchen.

■ Let us assume that your school will be serving a plate lunch and that it will consist of the government subsidized Type A program. Participation for your area generally averages 55% of ADA, plus 25% for supplemental milk. We, therefore, start with the premise that there will be 440 plate lunches served and 200 additional cartons of milk, and that the service will be in more than one period, either with five or 10 minute staggers, or two or three half-hour multiple periods.

For this size group, we generally allow from two-and-one-half to three square feet per meal; therefore, the size of the cafeteria might be from 1,125 to 1,350 square feet, depending upon the type of equipment and method of serving. This includes the serving area and the kitchen, with ample storage area, refrigeration, employees' rest room, dish room and scullery, sinks, work tables, serving counters, cooking and preparation area and equipment.

If preassembled tray racks are used, the total area might be reduced as much as 10%. Obviously no two school districts are alike, and the area will vary with the policy and with plans for future expansion.

The national average for number of meals served per man hour in elementary schools is 13.2. If this average were applied against the school under discussion, it would represent 34 man hours a day, which might include one eight-hour manager, one seven-hour cook, one seven-hour baker, two four-hour assistants and two two-hour helpers. However, using preassembled tray racks (*see SM, Jan. '59*) the average number of meals per man hour is closer to 15, which in this case would represent 30 hours of labor—an eight-hour manager, two seven-hour and four two-hour employees.

QUESTION: Isn't it necessary to serve some items that children don't necessarily like because they have high nutritional value?

■ Considering the vast number of items of high nutritional value that children do like, such as hamburgers, stews, mashed potatoes and meat with gravy, spaghetti with meat balls, toasted cheese sandwiches, chili with beans, tuna and noodles with cheese, etc., why should a dish be served that children do not like? If an item is prepared so that it tastes good and looks good, most children will eat it. In many ways children are more intelligent than adults and will instinctively shun theoretically healthful items that are not nutritionally sound.

Questions were submitted by readers of School Management.

Send your feeding questions to "Food Clinic" in care of this magazine.

About the author. Richard Flambert is a partner in the firm of Flambert and Flambert, San Francisco and St. Louis, food service consultants and engineers specializing in schools and institutions. He is a member of the International Society of Food Service Consultants.

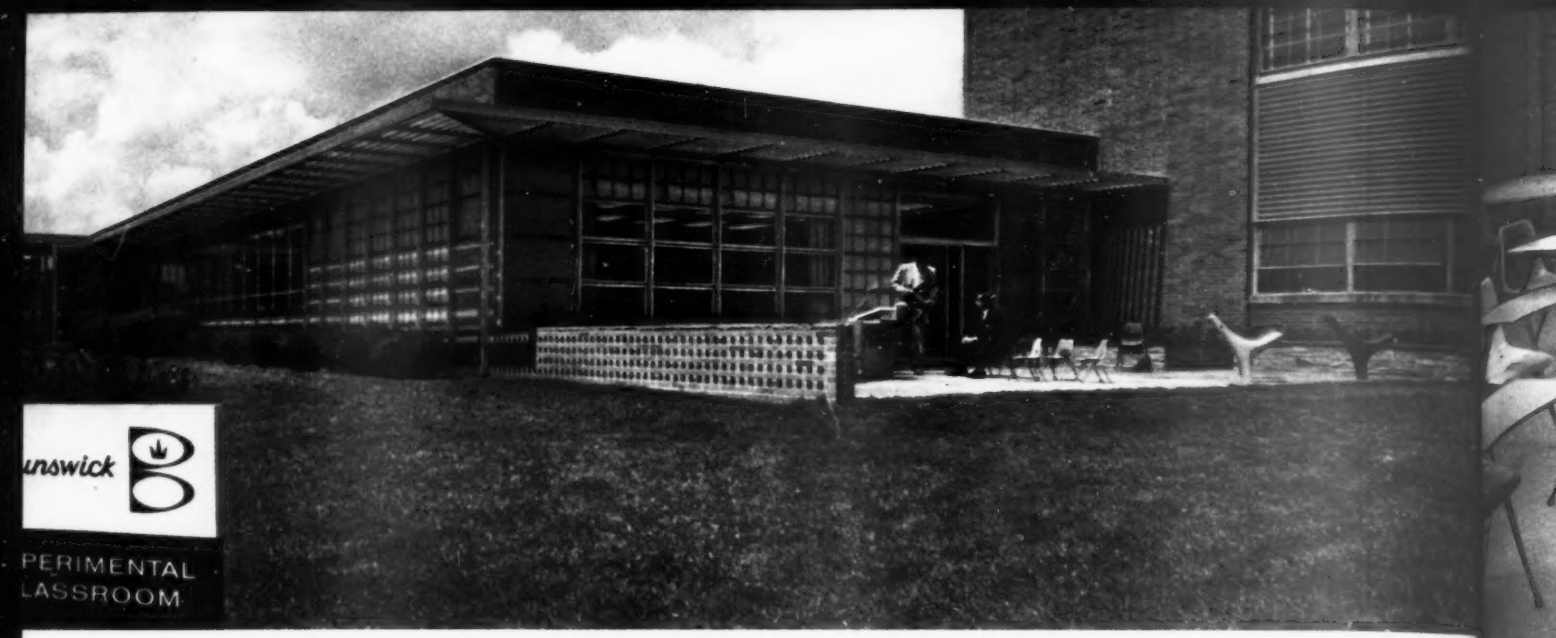
new school

older school

one room

or all

Brunswick *Belongs*



IT'S YOURS TO USE . . . the Brunswick Experimental Classroom . . . integral part of the new Brunswick Kalamazoo Plant

The first completely equipped classroom devoted exclusively to the study of the relationship between the learning process and physical environment. Educators are invited to use this unique facility for seminars, research, room utilization studies. It may also be used to pre-plan and see your rooms completely furnished prior to the purchase of equipment.

Reserve the Brunswick Experimental Classroom early to insure its availability.

Planning a new school? Remodeling an older one?

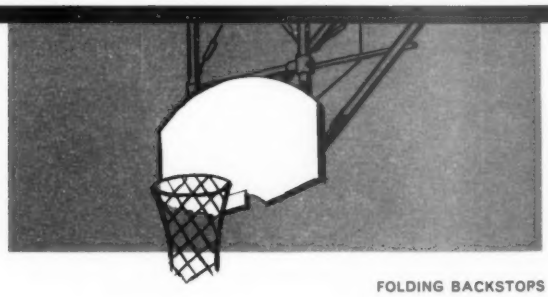
Call On The Man From Brunswick

a good man to have on your Building Team . . .

He's a good man to have around, all right! Especially in those early planning stages when his experience-tested suggestions on room lay-outs, equipment utilization, budgeting can well result in an improved schoolhouse—from both the functional and investment standpoint.

Your Brunswick representative is eager to be of help . . . to give his time and experience to your Building Team. Call him!

MODUWALL



FOLDING BACKSTOPS

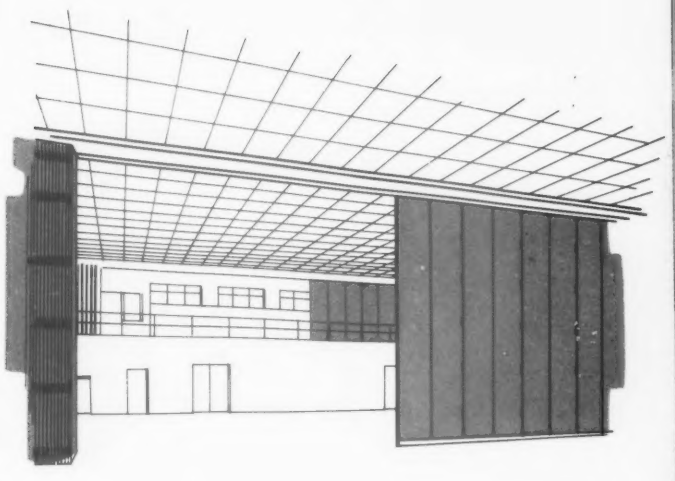
FOLDING STAGES

THE CONTEMPORARY SERIES

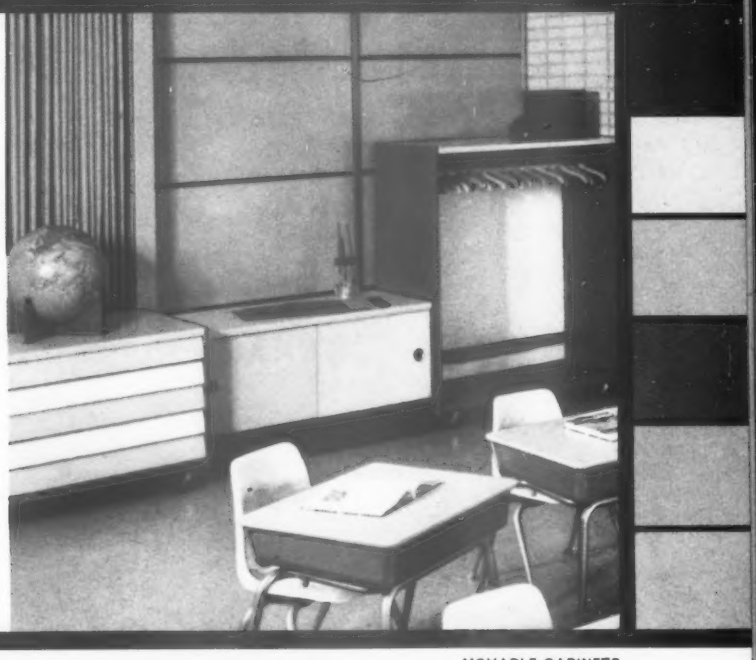
INVEST IN

SCHOOL EQUIPMENT OF
ADVANCED DESIGN

designed... manufactured...
installed... and serviced for
better learning... lasting value

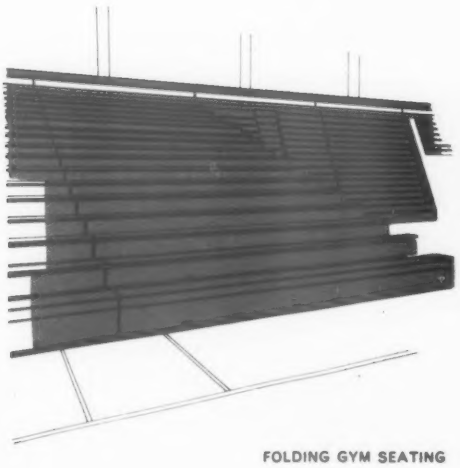


FOLDING PARTITIONS



IN THE OFFICE

MOVABLE CABINETS



FOLDING GYM SEATING

for better learning . . . for lasting value . . . invest in the all-new

CONTEMPORARY SERIES

by Brunswick

. . . and a completely coordinated series of flexible, functional

STORAGE AND SPECIAL PURPOSE CABINETS

in six coordinated Colors for Learning

New School . . . Older School Invest in Brunswick For Lasting Values Over the Years

THE CONTEMPORARY SERIES—Comfort molded of Lifetime Fiberglass in 6 beautiful Colors for Learning with new Ophtho-Light, parchment pattern writing and work surfaces. Seating, Desks, Combination units, Tables. Chairs in 8 sizes, Tables in 5 heights.

MOVABLE CABINETS—For storage, special purpose use. Interchangeable shelves, dividers, legs, casters, bases. 15"-22"-10" depths. Sliding doors and back panels in 6 Colors for Learning.

MODUWALL—Completely outmodes fixed-to-wall chalkboard-display equipment. Flexible panels (most used accessories—chalkboard, pegboard, tackboard, flannelboard, easels, magazine racks, storage cabinets, utility rails) may be affixed or removed in minutes. Functions change that fast!

'ROUND THE SCHOOL—Desks, cabinets, seating units designed specifically for special non-classroom areas—administrative offices, cafeterias, lounges, patios, etc. Design and color coordinated with regular classroom furnishings.

FOLDING PARTITIONS—Make full utilization of gymnasium and multi-purpose rooms. Durable, lightweight, quiet-room panels of Aerocore construction—variety of finishes and colors.

FOLDING BASKETBALL BACKSTOPS—Exclusive design permits installation from any ceiling structure. Folds into its own self-contained area. Really rigid when in play position.

FOLDING GYM SEATING—Full adult height seats designed to give you maximum seating for the space occupied. Unique sloping skirtboards give more leg room when seats are open, form a handsome front when seats are closed. Seats positively row locked in open or closed position. Available in 3 to 30 row sections . . . in laminated solid board flush surface; solid board with grooved surface and rail boards for maximum ventilation.

FOLDING STAGES—Space saving, easy to move folding stages with exclusive telescope fold that permits storage in minimum space. Always rigid, safe in use. Use them anywhere in the school as speaker's platform, for dancing, for theatricals. Available in 6 standard lengths; up to 35 feet in depth; heights from 18" to 42" in 6" increments.

YOUR COPY IS RESERVED . . .

SEND TODAY for your copy of the new full-color catalog of the complete Brunswick Line of School Equipment of Advanced Design. No cost, no obligation. (*or, if you'd prefer, we will send you individual catalogs on the lines indicated in coupon.*) Ask also for your copy of the authoritative fact and idea filled booklet "Functional Color for the Classroom."

e Brunswick-Balke-Collender Company
hool Equipment Division, 623 South Wabash Ave.
icago 5, Illinois

ase send: ☐ COMPLETE COMBINED CATALOG (includes all catalogs shown below) or the following individual catalogs.

- ☐ Contemporary Series, Furniture
- ☐ Movable Cabinets
- ☐ Traditional Series, Laminated & Metal Furniture
- ☐ Moduwall, Chalkboard-Wall Display System
- ☐ Folding Partitions
- ☐ Folding Gym Seating
- ☐ Folding Basketball Backstops
- ☐ Folding Wardrobes
- ☐ Folding Stages and Steps
- ☐ Functional Color for the Classroom

me_____

hool or Firm_____

dress_____

y_____ Zone____ State_____

3-7766-55

THINGS YOUR PUBLIC OUGHT TO KNOW

Basic information that schoolmen can use as a part of a community education program

How much education will a dollar buy?

■ ■ ■ One of the wonderful things about the American public school system—and one of its greatest weaknesses—is the principle of local control and local support. A school district can have just about anything that it is willing and able to pay for in the way of an educational program. What's more, its expenditures will not affect, by a single mill, the tax rate of another community.

Naturally, this system leads to comparisons. School boards, in particular, like to compare their expenses with the expenses in other districts. They want to know if they are spending too much, or too little.

This kind of comparison is useful when reliable yardsticks are used. And one of the most reliable yardsticks is a little known standard called "expenditure level."

What is expenditure level?

Expenditure level is *not* a measurement of educational quality. It is an ingenious device for reducing a district's financial efforts to a common base so that they can be compared with the financial efforts of neighboring communities.

Here is what you do: First, obtain your "net current expenditure" by subtracting, from *total* school expenditures, your payments for debt service, current capital outlays, transportation and tuition paid to other districts. Then, divide this fig-

HOW MUCH QUALITY CAN YOU AFFORD?

Financial climate	SPENDING POLICY								Characteristics of teaching staff	
	Salaries			Number of staff						
Expenditure level (Cost/pupil)	Av. elem. teach. sal.	Av. sec. teach. sal.	Av. sal. other prof. employees	Tot. Prof. staff/1,000 students	Av. elem. class size	Av. sec. class size	Supervisors/1,000 students	Expenditures/pupil for teach. supplies	% elem. teach., 5 or more yrs. prof. training	% sec. teach., 5 or more yrs. prof. training
$750	$7,110	$7,890	$10,373	71	15.9	12.8	8.5	$245	79%	91%
$420	4,885	4,950	5,895	57	20.	16.4	3.5	104	47%	55%
$280	4,065	4,319	4,510	45	27.	22.8	2.5	64	22%	27%

ure by your "expenditure pupil units." Your "expenditure pupil units" is derived by assigning each pupil in average daily attendance, in kindergarten through the sixth grade, a value of one. You assign each pupil in grades seven through 12 a value of 1.3. This adjustment takes into account the higher cost of educating secondary school pupils as compared to elementary ones.

When you divide your expenditure pupil units into your net current expenditures, you get your expenditure level.

Warning: If your school system has fewer than 316 pupils in kindergarten through the sixth grade, and fewer than 695 pupils in grades seven through 12, the above formula won't apply unless you use a special sparsity correction formula. In other words, you really have too few students to do the most economical job of educating.

How to use the chart

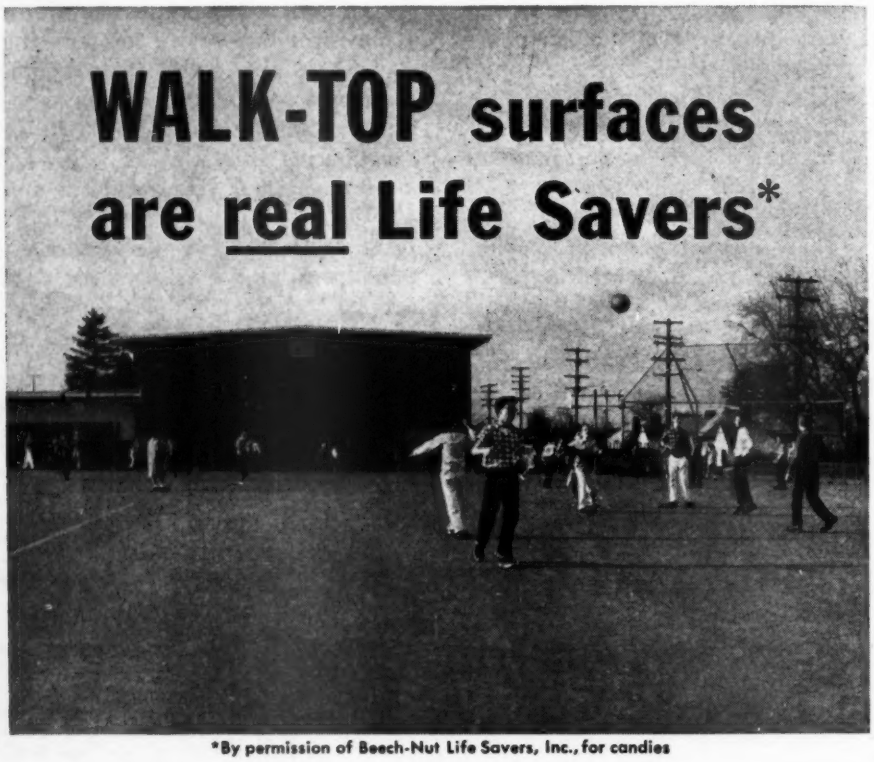
Now you're ready to play the game of "let's compare." But remember—you're not only comparing quality of education. You're comparing the level of your *financial effort*. This will have a profound effect on overall quality, of course. The chart (*see page 21*), demonstrates this last fact.

The first thing to do is to find which of the three expenditure levels per pupil most nearly corresponds to yours. Now you are able to compare some of the specifics in your local program with the efforts of other school districts. The figures in this chart are based upon school districts in the Associated Public School Systems, the Central School Districts (an organization of districts in rural New York State) and the districts in the Metropolitan School Study Council. It is worth noting that these are considered to be "good" districts on a national basis. You're comparing with the best.

Observations worth noting

In the last analysis, you're interested in educational *quality*. So, what do those communities with expenditure levels around $750 per pupil get in the way of educational quality that those around $480 do not? For one thing, every study ever made that investigated the relationship between salaries paid teachers and school quality has shown the relationship to be a high and positive one. It is no secret that many of the best teachers behave like human beings and seek the best salaries. And districts which pay more have subtle ways of publicizing this fact. Some professional educators think this system of supply and demand is "unprofessional." Others, more realistic, say, "When butter is dear, you pay more for butter."

The effect of expenditure level on staffing *quantity* is worth noting. For example, schools spending around $280 per pupil have approximately 45 professional staff members per 1,000 weighted pupils. A breakdown of this figure reveals that, on the average, the elementary schools are staffed with 37 classroom teachers per 1,000 weighted pupils and the secondary schools with 44. These teachers are assisted, on the average, by 2.5 supervisory personnel for each 1,000 pupils. Note the sharp contrast when the expenditure level jumps to

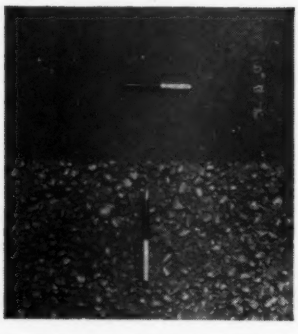


*By permission of Beech-Nut Life Savers, Inc., for candies

On playgrounds and other surfaced areas, Laykold® Walk-Top has proved safe and resilient, with truly "life-saving" qualities.

Over any sound and stable pavement base, Walk-Top provides a smooth, long-wearing surface seal that extends the life of the base. And because it is non-abrasive, it reduces skins, "burns" and other injuries normally associated with play-yard falls and tumbles.

Call our office nearest you for full information on Walk-Top today. Our Laykold Engineers will welcome an opportunity to give you the full "Walk-Top/Life Saver" story.



Here you see, close-up, a comparison between an ordinary road-type surface before (below) and after application of Walk-Top. Smooth, resilient and safe, Walk-Top is a real Life-Saver for the pavement, as well as for play shoes and clothes. Holds "skinned knees" to a minimum, too.

American Bitumuls & Asphalt Company

320 Market, San Francisco 20, Calif. Perth Amboy, N. J.

Baltimore 3, Md. St. Louis 17, Mo. Cincinnati 38, Ohio
Mobile, Ala. San Juan 23, P. R. Tucson, Ariz.
Inglewood, Calif. Oakland 1, Calif. Portland 8, Ore.

(Circle number 703 for more information)

$750 per pupil. These schools have 71 professional staff members per 1,000 weighted pupils. Breaking this figure down, you find that the elementary grades have about 63 staff members per 1,000 pupils, and the secondary schools 78. Moreover, these teachers are assisted in their work by 8.5 supervisory personnel per 1,000 weighted pupils.

How important are these supervisory people? Dr. Conant's recent recommendations that the diversified abilities of all pupils be sufficiently challenged, gives one key. He calls for expert counseling in the high schools—a ratio of one full time counselor for each 250 to 300 students. Counselors fall into this supervisory personnel category. Thus, schools on the $280 expenditure level would be hard put just to meet Dr. Conant's counseling requirements, let alone provide any other specialists.

Summary

Dr. Orlando F. Furno, specialist in state educational finance, who prepared this chart for SCHOOL MANAGEMENT, makes this suggestion: "Warn your readers not to be booby-trapped by the school class-size figures. Class-size is an easy figure to think of, but very difficult to define statistically. Averages don't mean much. If a school follows Dr. Conant's suggestion of at least four years study in a foreign language, the class-sizes in the fourth year are going to be very small and will lower the overall average. The same thing happens when schools use ability grouping. If a single standard is desired, it is much better to use "total professional staff per 1,000 pupils."

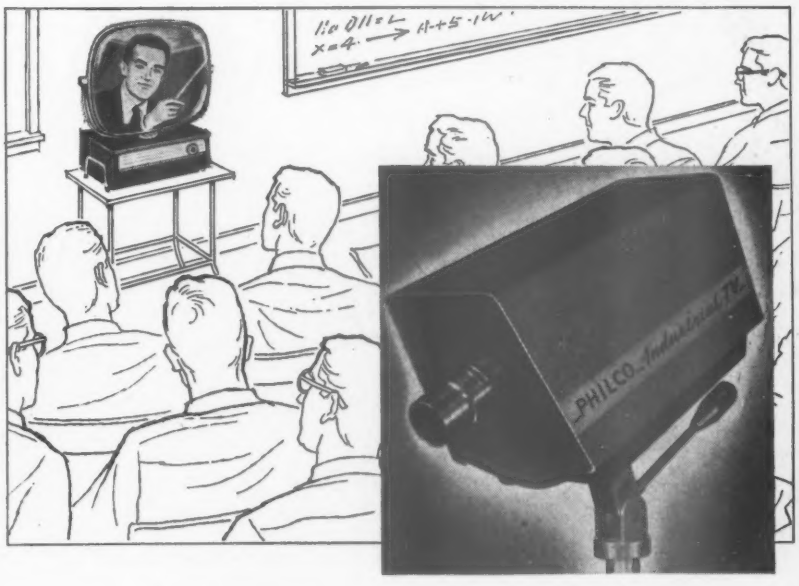
We asked Dr. Furno to summarize, with an overall statement, what he felt was provided in the way of quality by each of the three expenditure levels shown. Here is what he answered:

"At $750 per pupil, the whole school environment promotes health and safety. Small classes are the rule rather than the exception. Most children receive individual attention and special aptitudes and talents are developed to the fullest. Textbooks and instructional supplies are adequate and varied. Libraries are supervised by competent librarians and adequate books, reference materials and reading room are available. Kindergartens and primary grades are specially designed. There is an adequate number of special and supervisory professional personnel. Numerous opportunities for children to engage in important curricular and extra-curricular activities, including art, music, science, foreign languages, handicrafts and guidance programs —are available.

"At $280, school plants are usually inferior. (Some are fire-dangerous.) Teachers are not very well trained. Teaching methods used are not usually consistent with the laws of learning. Supplies of books and materials are inadequate. Records of student achievement are poorly kept. Play activities are undirected. There is very little attention to individual needs of children, guidance is practically non-existent. Few experiences for character and citizenship development are present.

"At $420 the quality of the school program lies somewhere between these two extremes." **End**

First from PHILCO®...



New All-Transistor TV Camera for Schools at **only $1445**

Here's the camera that makes educational TV practical—dependable and trouble free . . . at a saving of hundreds of dollars.

A lightweight, maintenance-free, foolproof camera that anyone can operate. No matter how large the audience . . . now, everyone can participate in lectures, demonstrations, classroom sessions. Compare the quality of this newest Philco TV camera with *any* other. To improve the quality of your audio-visual program . . . at dramatic savings . . . insist upon Philco TV.

Place your order now to assure early delivery. Write for Philco TV Planning Book. *Government & Industrial Division, 4702 Wissahickon Ave., Philadelphia 44, Pennsylvania. In Canada: Philco Corporation of Canada Limited, Don Mills, Ontario.*

PHILCO QUALITY FIRST!

(Circle number 733 for more information)

this is the new IBM Electric

Its clean, contemporary look and ease of operation stimulate in the student a desire to learn. Its 28 advanced engineering features help him achieve greater speed and accuracy, with better typing habits, far more quickly.
Its durability and dependability result in minimum down time and maximum student use.
From any point of view—teacher's, student's, or administrator's—this is today's finest teaching typewriter.

IBM®

An inexpensive way to handle NOON-TIME TRANSPORTATION

By FRED B. WIEGMAN
Superintendent, White Cloud, Mich.

Hauling kindergarten children at noon strains most transportation budgets. Here's an idea for cutting costs—within the reach of any district.

■ ■ ■ The White Cloud, Mich., Board of Education looked seriously at the area of transportation when it tried to cut the over-all budget last summer. One of the more expensive items was the hauling of kindergarten children on noon runs.

As long as we used one of our regular school buses, it meant that a special operator had to be called on duty and gas and maintenance costs were prohibitive for the comparatively few children the bus was carrying.

After checking costs of the initial outlay, maintenance and operation of several types of smaller vehicles, the board decided to try a Volkswagen Kombi. The Kombi is a truck-type vehicle with dual side-opening doors and a rear exit door. It is easily converted to a level-arm inside-opening door, controlled by the bus driver with a standard bus door handle. Our school bus mechanic constructed serviceable seats out of angle iron and white pine.

The seating is so arranged that a comfortable load of 19 kindergarten children can be hauled.

The wagon is driven by our bus mechanic, who is on full-time duty anyway. Although at present the kinderwagon, as we have dubbed it, is used only at noon, we are considering having it make regular morning and afternoon runs next year.

One other advantage of the kinderwagon is that it can be driven by any qualified driver. Thus we have made it possible for many members of our faculty to use it. For example, the band man, basketball coaches and junior high school coaches have found the kinderwagon a useful and easy-to-manage vehicle. We have also made the kinderwagon available to the building principal for taking sick children home. As a result there has been an appreciable cut in mileage slips.

The board discovered that in another community the maintenance costs of this vehicle, were .005 cents per mile over a two year period. We have found for periodic oil and grease checkups, that our costs are even less than this insignificant figure, due to a full time mechanic on the job and bulk purchasing.

There is naturally a substantial difference in gasoline consumption when compared with a standard 54-passenger bus. The wagon makes normal stop-and-start runs with an average of 25 to 30 miles per gallon. On the same run, a standard school bus averages 7.3 miles per gallon.

The vehicle has a safe gasoline heater, parts are easily secured nearby, and insurance is at the same rate as a regular bus.

White Cloud lies in the northwestern part of the Michigan snowbelt, so the factor of snow surrounds all of our decisions when we consider transportation vehicles. To date, the "bug," as it is affectionately known to pupils and drivers, has yet to be snow bound, while some of its bigger and heavier brothers are stopped until the plow goes through.

There are two very important results from this move to kinderwagon transportation: very favorable local reception to both transportation and finance issues, and suitable transportation tailored to fit a unique problem.

Needless to say we like our kinderwagon. We are now considering adding a second one to our 12 bus, one kinderwagon, fleet. **End**

ANNOUNCING THE

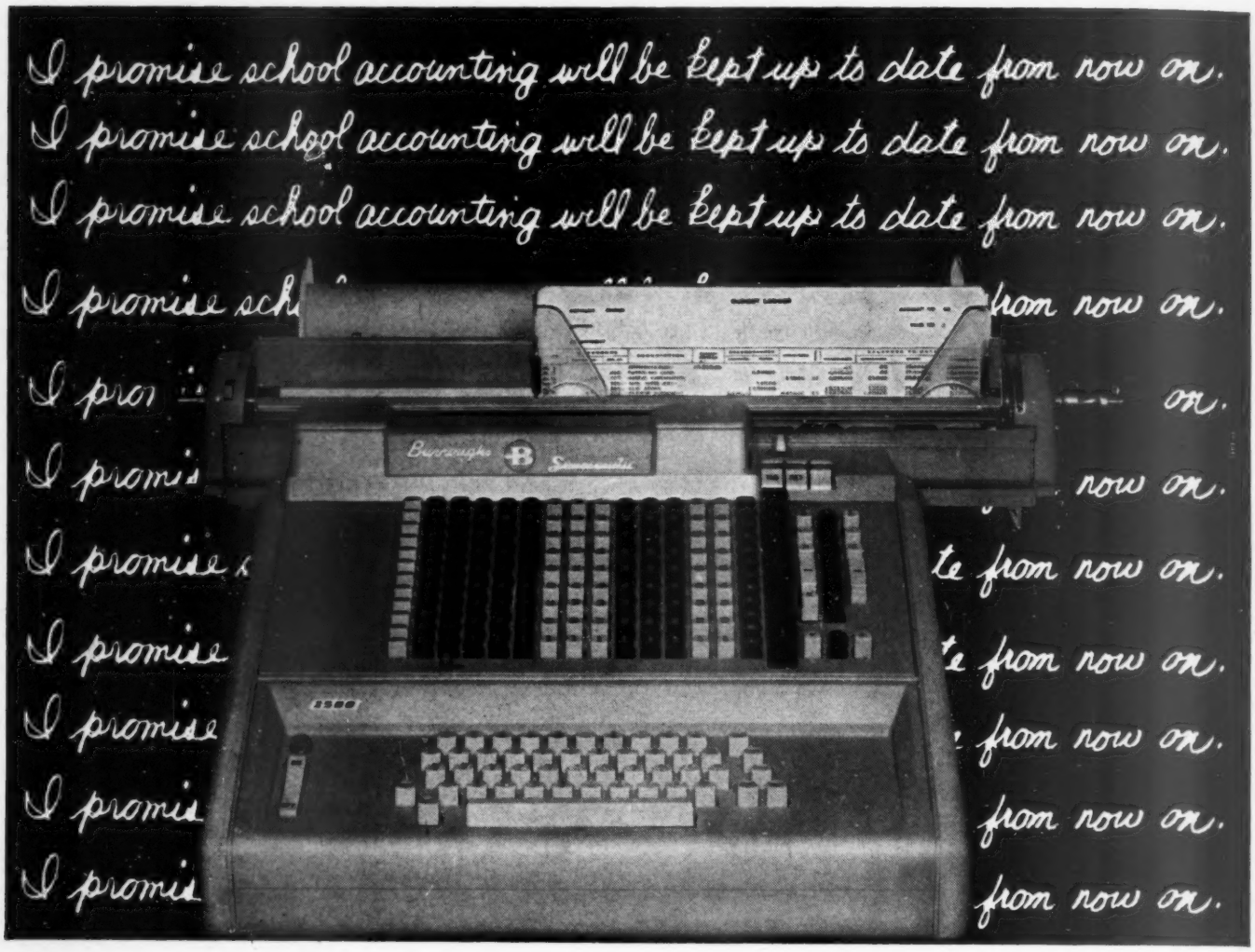
a touch
so light
it's almost
electric

MASTERS YOUR PAPERWORK

*An Underwood Trademark

A touch so light, so responsive..."it's almost electric"...up to 58% less effort than any other standard. Only Underwood, for 64 years the world's best known name in typewriters, could create the new Touch-Master II.* Ask for a demonstration.

(Circle number 747 for more information)


I promise school accounting will be kept up to date from now on.
I promise school accounting will be kept up to date from now on.
I promise school accounting will be kept up to date from now on.
Burroughs Sensimatic

. . . WITH THE MOST COMPLETE SCHOOL ACCOUNTING PLAN

Of course, nobody really punishes an administrator with blackboard assignments.

Nevertheless, he'll save himself a lot of financial headaches with the new Burroughs school accounting plan which incorporates the unparalleled speed and flexibility of Burroughs numerical or typing Sensimatic. And, as ever more students pour into our schools year after year, the need for complete, accurate, instantly available financial data becomes increasingly obvious.

The new Burroughs plan brings complete mechanization of descriptive accounting to school systems. Look at these benefits: Greater productivity with less effort. Improved accuracy. Smoother work flow. Split-second availability of all the figure-facts you want when you want them.

Even a newly trained operator can race through revenue accounting, budgetary accounting, check writing, payroll, student activity accounting. She can switch from job to job at the flick of a knob.

There's a free booklet about this work- and time-saving plan. You can get your copy by calling our nearby branch office. Or write to Burroughs Division, Burroughs Corporation, Detroit 32, Michigan.

Burroughs and Sensimatic are trademarks.

Burroughs Corporation

"NEW DIMENSIONS / in electronics and data processing systems"

(Circle number 711 for more information)

NEWS OF THE SCHOOLS

A digest of current happenings in public education

Going to the dogs

Dogs don't hang around the elementary schools of Plainwell, Mich. anymore. They've been told not to.

The dog-in-school problem was solved for the community by Principal Herbert Moyer who has printed on shipping tags a message to the effect that the dog is a nuisance on school grounds. It requests that the owner please take steps to restrain the animal.

When a dog appears, Principal Moyer ties one of the shipping tags on the dog's collar before shooing him home. So far, reports Assistant Superintendent Ora F. Weeks, Jr., no dog that has gotten the message has returned.

We assume, of course, that Plainwell has friendly dogs.

Free lunch program breaks through red tape

All needy school children in Houston, Tex., are receiving free lunches now, following recent investigations that showed some schools had cut out the programs because of administrative red tape.

Superintendent John W. McFarland instituted a "feed first, investigate later" order, when it was shown that many students were going without lunch because of a previous order from an acting superintendent who had warned principals to "insure that a real need exists" before providing free lunches.

The Houston free lunch program is under the sponsorship of the city's United Fund which provides funds for its support. School officials had tried to cut down on the lunch program because they felt they would need more money from the United Fund.

As a result of the cut-back in free lunches, it was found that in some cases teachers were taking money from their own pockets to feed children. Other students were being fed from individual school activity funds. And, in some cases, no provisions at all were made for needy children. In one school, it was estimated that more than 700 students would be eligible, but the principal had simply dropped the program when confronted with the task of determining exactly which students were really eligible for the aid.

Kitchen hazard survey off to good start

Superintendent response to a U.S. Department of Labor survey on school kitchen hazards (*SM, March '59, p. 80*), has been very good, according to George R. McCormack, chief of the special studies branch of the industrial hazards division which is conducting the study.

Almost 50% of the questionnaires mailed, were returned in the first two weeks. Of these, more than 1,500 contained usable data.

A second mailing to superintendents who did not respond the first time, is now in the mails. The bureau must receive a minimum of 75% response before it can undertake any kind of a valid survey. Superintendents receiving the second letter have been asked to return their completed forms as soon as possible.

Altogether 4,463 questionnaires were mailed. They went primarily to superintendents in urban districts. The survey is being made by the Department of Labor at the request of the American School Food Service Association.

Schooling priced out of New England market

It looks as if the nation's general concern for more educational opportunities has not affected parts of New England. There, recently, one proposal to lengthen the school year was turned down, while in another state a measure to *shorten* the school year was receiving heavy support.

In both cases, spokesmen for limited

Too good to miss . . .

Contribute your pay . . . Teachers in Hartford, Conn., are being asked to contribute $50 apiece to the schools. School Board President Thomas E. McBride made the request. He said the money contributed would be used to hire new teaching specialists, thus lightening each teacher's load.

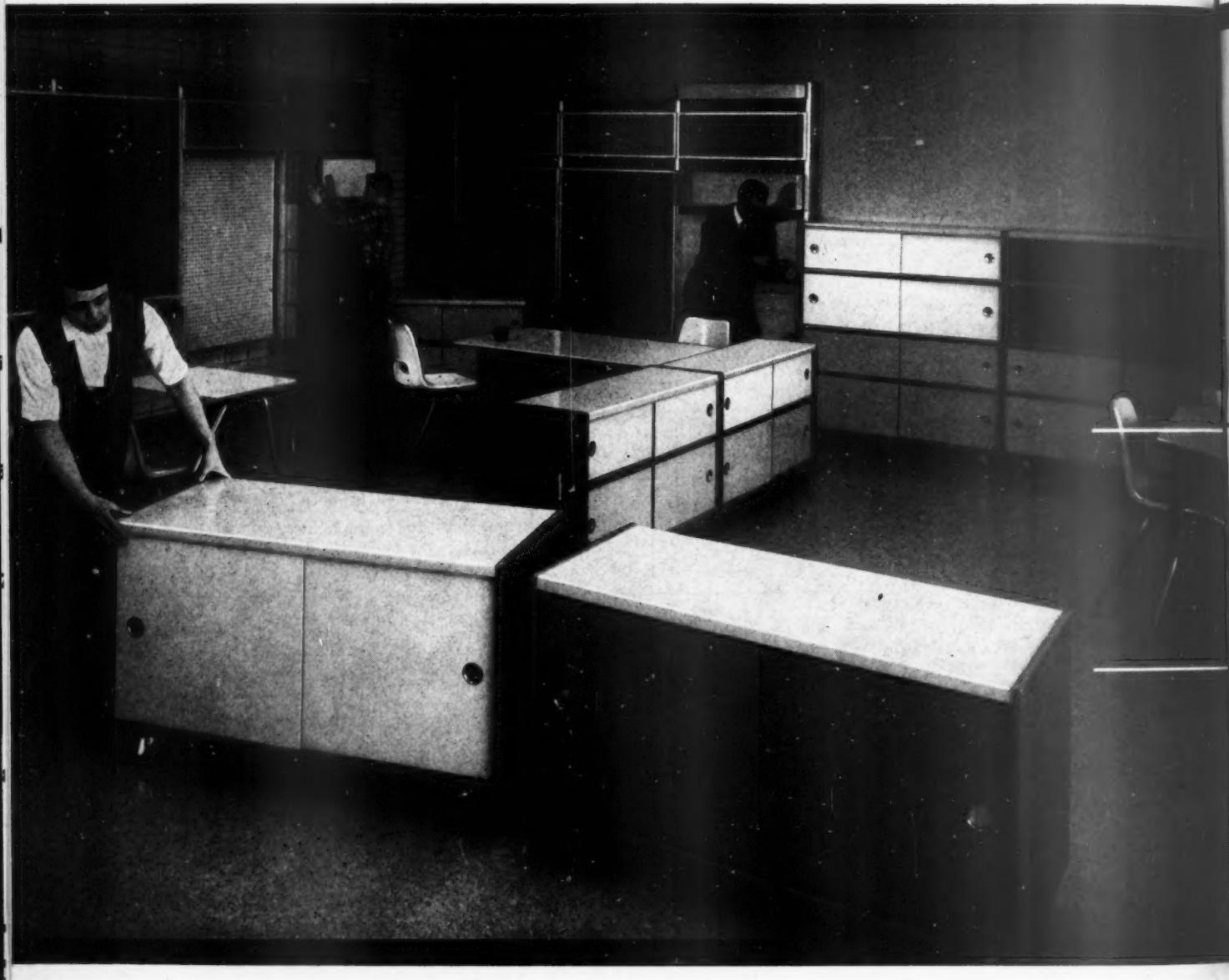
Contribute your name . . . In Pasadena, Tex., there's a 16-year-old student who was known as the oldest seventh-grader in history when he started his third year there. Understandably bored with the courses, he quit school. A month later he turned up in a 10th grade class, using the name and grades of an older brother who had quit school two years before. But all good things must come to an end. Our hero was discovered after six weeks and demoted back to his own seventh grade.

Contribute your space . . . Students in Burlington, Vt. and Muskegon, Mich., are really learning what overcrowded schools mean. In Burlington, a class is being taught in a converted coal bin. Some Muskegon students are attending school in an old pool room and a former funeral home.

Contribute your teeth . . . School children in the St. Louis metropolitan area have been asked to collect their fallen baby teeth in the interests of science. They will be used to measure the amount of strontium 90 absorbed by growing children. Strontium 90 is a radioactive isotope, produced by nuclear explosions, that is believed to cause leukemia.

The Future Takes

when you have Brunswick



and you save thousands of dollars

in the costly maintenance and remodelling of fixed millwork cabinetry and chalkboard . . . in always available standardized parts . . . in classrooms obsoleted by fixed-function equipment.

Brunswick

Care Of Itself

movable cabinets and moduwall

Yes, the future takes care of itself when your classrooms are equipped with movable, versatile Brunswick Cabinets and Chalkboard-Display equipment. No need to *out-guess* your future requirements –you simply move cabinets or Moduwall units when those decisions come up—next week, next semester, or twenty years from today. Even more important, your community reaps the benefits of *always* having the finest educator-developed equipment to fulfill your specific teaching and learning objectives!

AS SCHOOL POPULATION SHIFTS—Primary grade rooms become junior high rooms, junior high rooms become high school rooms by simply shifting the kind and placement of cabinets, by changing the heights of Moduwall chalkboard-display units. Your custodian or staff can do the job in minutes. Units can easily be moved from building to building.

AS CLASSROOM FUNCTIONS CHANGE—Homerooms become social studies rooms, language arts classes become business education rooms, math classrooms become arts and crafts rooms—*as the need arises*. You are never restricted by fixed cabinetry, fixed wall equipment. Rearrange your Brunswick moveable furniture and cabinets, set-in the correct Moduwall panels—and class is ready to meet!

new school . . . older school

Try a "GET STARTED" Brunswick Installation

Ten Cabinet or Moduwall arrangements are available in special "Get Started" packages. Typical Moduwall Instructor Center (Illustrated) Package includes: 4 standards, 1 chalkboard panel (3′ x 4′), 1 tackboard panel (3′ x 4′), 1 pegboard panel (3′ x 4′), 2 tackboard panels (3′ x 1′), 1 open-type bookshelf, 3 utility rails. Installation Free.

$136 f.o.b. Kalamazoo

BRUNSWICK MOVABLE CABINETS—19 practical cabinets for every storage and special purpose requirement. 4-foot length modules (10″, 15″ and 22″ deep) in 6 New Colors for Learning. Available with casters, glide-legs, full and island bases or for wall mounting. Ophtho-Light plastic work surfaces resist dirt, abrasion, stains. Removable shelves and dividers give thousands of variations. Shipped K.D., assembled with a phillips screwdriver in seconds.

BRUNSWICK MODUWALL—72″ standards are placed 3 feet apart—will take any of 12 panel units—ceramic-surfaced steel chalkboard, pegboard, tackboard, easelboard, flannelboard, bookshelving, cabinet storage, magazine racks, utility rail. Chalkboard writing surface carries a Lifetime Guarantee, may be used with magnetic accessories for display. Moduwall may be installed on any wall material. Panels can be changed by teacher or student in minutes.

The Brunswick-Balke-Collender Company
School Equipment Division, Dept. SM-5
623 South Wabash Avenue
Chicago 5, Illinois

PLEASE SEND MORE INFORMATION ON:

- ☐ Brunswick Cabinets
- ☐ Brunswick Moduwall
- ☐ Special "Get Started" Packages
- ☐ Send New Full-Color Catalog on Brunswick Lifetime Fiberglass Furniture
- ☐ Gymnasium Equipment

schooling cited one major reason: money.

In Vermont, a state board of education proposal to add five days to the school year was allowed to die in the legislature when its sponsor withdrew the bill. It had been reported favorably by the education committee but hit a snag in the house's appropriations committee.

The big stumbling block came when investigators discovered how much five more days of school would cost taxpayers for instruction, transportation and other school expenses. The bill would have been defeated after a struggle, one house member said. "We merely wanted to eliminate the struggle."

Meanwhile, in neighboring New Hampshire, a plan to delay the opening of school for a full week received strong support at a hearing. Supporters of the scheme said that it would serve to lengthen the state's tourist and recreational season, adding more than $1 million to the state's income.

The idea was generally supported by business groups across the state. Only opposition came from Education Commissioner Charles F. Ritch, Jr., who said his main interest was to see that children received a minimum of 180 days of instruction a year. He also warned that the time might be coming when 200 days would be a necessary minimum.

Marriage book banned by board

A textbook on marriage, endorsed by many church groups, was banned recently by the school board in Ferndale, Mich., because of "its frankness" and its diagrams of the human body. The book, "Home and Family Living," by Dr. Evelyn Millis Duvall, nationally known family relations consultant, had been used as a supplementary text in a senior class in home and family living.

The board directed that the books be removed from the high school and ordered that teacher Wendell Kelly stop using them. "I don't believe any man with an open mind could object to this book," Kelly said, in reporting the incident to a meeting of the Ferndale Education Association. The association voted to make a written protest to the board "on the ground of academic freedom."

At the same meeting at which it banned the book, the Ferndale board demoted Principal Scott Street of the Paul Best School because of a disagreement over educational policies. The Best school, which had become famous as a leader in experimental educational work, was a center of controversy in a recent board election in Ferndale. As a result of the election, a group opposing "progressive education" gained a majority on the board, leading to the demotion of Principal Street. The Ferndale Education Association has also taken an active part in protesting that decision of the board.

Query submarine sandwiches, pizzas on school menu

Do submarine sandwiches, pizzas and potato chips belong on a school's hot lunch menu? This question has been raised in Cambridge, Mass., where two city councilmen are investigating a $60,000 deficit in the local feeding program.

Defending the menu are Superintendent Edward T. Sullivan and Board Member Daniel J. Hayes, Jr., who branded the attack on the hot lunches "just a lot of hot air . . ."

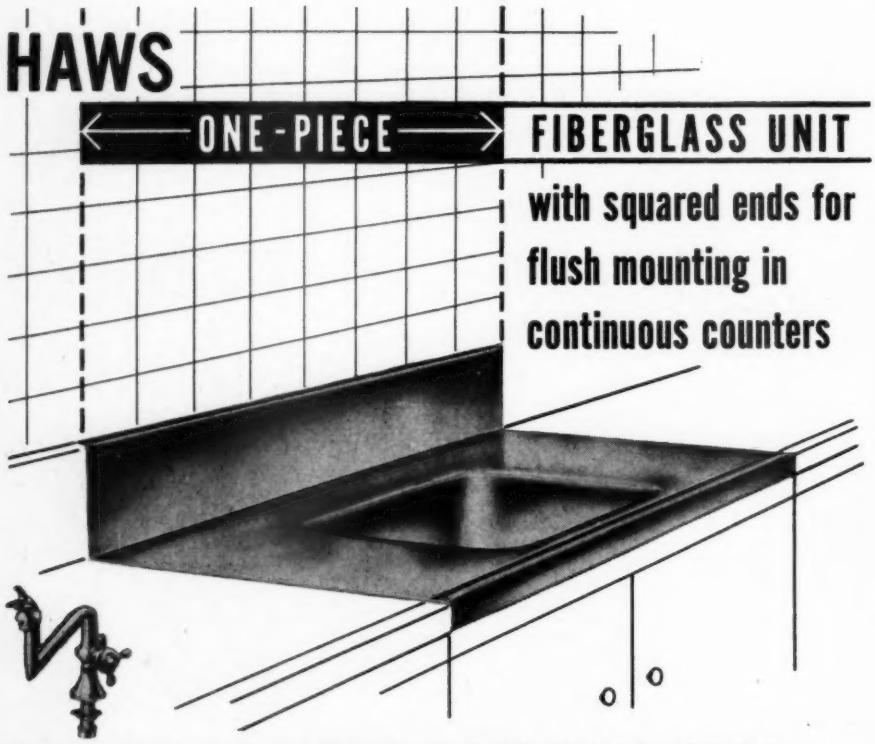
Superintendent Sullivan told the councilmen that the menu has won approval from the Federal government

continued on page 36

HAWS

ONE-PIECE FIBERGLASS UNIT

with squared ends for flush mounting in continuous counters



DRINKING FOUNTAINS

PANTRY FAUCETS

LABORATORY FAUCETS

For commercial, school, industrial and residential use... HAWS Series 2800 is a one-piece fiberglass molded unit with integral receptor and deck-top. No cracks or joints for water accumulation. It's specifically designed for simple installation in continuous counters; squared ends butt snugly against adjacent counters. Decks slope to receptor for complete, unhindered drainage.

Fiberglass finish is colorful and durable! You can choose from five decorator colors at no extra cost! Choose your pantry faucet and fountain fixtures, too, from HAWS complete line of facilities for every purpose.

ARCHITECTS, BUILDERS, SCHOOL OFFICIALS... here's an idea worthy of your attention. Write for illustrated literature, today.

HAWS DRINKING FAUCET COMPANY

1441 FOURTH STREET (Since 1909) BERKELEY 10, CALIFORNIA

(Circle number 716 for more information)

KAWNEER

INSIDE AND OUTSIDE WALLS
designed with the taxpayer in mind

To many students, a wall is just one great big drawing board. Refinishing becomes an annual expense. This glass wall frustrates the muralists, and students treat it with care . . . probably because their mothers have hollered, "Careful! That's glass," since they were infants. This wall is framed with Kawneer Aluminum Narrow Line structural members; Kawneer Color Wall panels (mar-proof and washable, too) are interspersed to give the wall interest. Kawneer Narrow Line with Color Wall panels also make wonderfully inexpensive, low maintenance exterior walls, too.

FREE BOOK! "Three Vital Elements of New School Planning" shows you how you can prevent a new school from becoming a tax burden. Mail coupon for free copy today!

Serving Architecture and Industry
Kawneer
General Offices Niles, Michigan
Architectural Products Division
since 1906

Kawneer makes wall systems for schools • doors for schools • wall facings for schools • student weather protection products for schools • door hardware for schools • and Kawneer even makes trophy and poster cases for schools.

Kawneer Company
Dept. SM-59 • Niles, Michigan

Please send me by return mail your free book, "Three Vital Elements In New School Planning."

Name_____

School and Title _____

Address_____

City_____ State_____

(Circle number 721 for more information)

Right answers.....

. . . come faster

when she's comfortable

You can see the difference in student response when classroom weather is kept at the correct comfort level. With a Nesbitt system, comfort is maintained automatically for each classroom, regardless of variations in outside conditions.

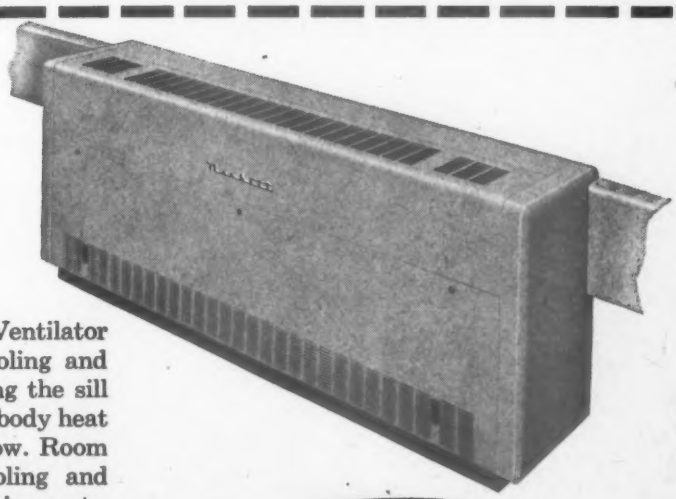
Familiar problems of too much or too little heat, cold walls, drafts, stuffy air, odors and noise are eliminated by the practical, economical Nesbitt system. Student efficiency is kept at peak level . . . the right answers do come faster.

Nesbitt Publication 101 will give you full information on how and why.

Nesbitt

COMFORT CONTROLLED CLASSROOMS

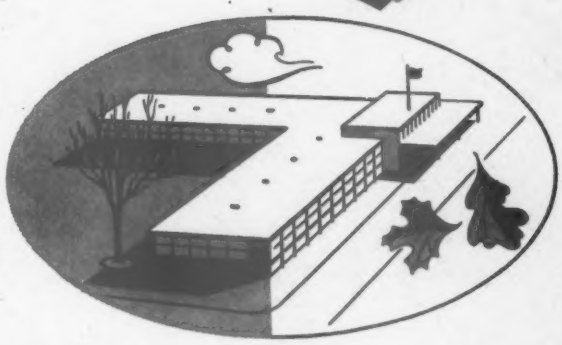
JOHN J. NESBITT, INC., Philadelphia 36, Pa.
Sold also by American-Standard, American Blower Division, and American-Standard Products (Canada) Ltd.



Nesbitt Assures Balanced Comfort in every room—regardless of outdoor conditions

In each classroom, the Nesbitt Syncretizer Unit Ventilator meets the general requirements for heating, cooling and ventilating. Wind-o-line Radiation installed along the sill provides protection against drafts and the loss of body heat to cold walls for students seated near the window. Room thermostats automatically adjust heating, cooling and ventilating to meet individual classroom requirements.

For example: One side of the building may be shaded, cool and windy. Classrooms on this side are kept at student comfort level with Nesbitt controlled heat and ventilation. On the lee side of the building, heat gains from direct sunlight, inside lighting and student occupancy are automatically compensated for, as Nesbitt units go on cooling cycle. In all classrooms, Wind-o-line protection continues only so long as the need exists.



(Circle number 731 for more information)

and the state's chief nutritionist who said the menus were "very good." He quoted the nutritionist as saying that pizza, potato chips and submarine sandwiches were "well within the scope of the hot lunch program."

Education sold at first grade store

It may smack of commercialism but first grade students at the Monroe Elementary School, Granger, Utah, are learning to read via a new system devised by their young teacher, Mrs. Geraldine Wilkinson.

With student aid, she has set up a grocery store in her home room. One wall is completely stocked with cartons, cans and boxes.

"The youngsters run the store, buy and sell, price the 'merchandise,' stock the orders and are learning to read and recognize many more words through this realistic business," she explained.

Parents have co-operated in the project and say their children are developing a much larger reading and speaking vocabulary. Students are responsible for placing groceries under the right labels and they learn numbers through pricing items and by the use of play money with which they buy different commodities Mrs. Wilkinson said.

"Now it's spreading to other grades . . . students from all the school come in to buy from our play store, creating more interest and enthusiasm among our 45-student class of first graders," she stated.

State senate rejects red-exposé courses

A bill to force all public high schools to teach a one-year course in the evils of Communism, was rejected by the Massachusetts Senate recently. The bill would have also required teachers to take an additional loyalty oath.

The bill's sponsor claimed that such courses would equip the youth of today to better withstand Communist propaganda. A leading opponent, Former Teacher Kevin B. Harrington, argued that he had been unable to teach the material covered by the proposed legislation to college students in 10 years. He pointed out that it would require schools to teach the history of all Communist nations and that there are now 20 to 30 under Communist rule.

The legislation was defeated after a long debate.

Small company offers special scholarship

A company does not need to be big to aid schools in its area, nor does every contribution have to be a major one. Many small firms are now shouldering some responsibility in this area by offering facilities, manpower and even money within the limits imposed by their size.

For example, the George T. Johnson, Co., sanitation specialists, have recently offered a $2,000 scholarship to students in the New England area. To be eligible for the award, the student must be the son or daughter of a member of a school custodial staff.

Says President James Reider, "unfortunately, today most people think that large corporations are the only ones in a position to grant scholarships to help the youth of America. I personally feel that the combined efforts of many small organizations could provide an opportunity for many thousands of students to enjoy the possibilities of a higher education.

"We have selected the school custo-

continued on page 41

Discover the U.S....
Fly **UNITED AIR LINES**
on a low-cost Mainliner Vacation!

From historic New England to the warm enchantment of Hawaii's shores . . . from the rugged beauty of the vast Pacific Northwest to the colorful, sun-kissed excitement of southern California or Las Vegas . . . nothing offers more inspiration to vacation travelers than the U. S.

Add to this the fact that anywhere you choose is only hours away via fast, radar-equipped United Mainliners®. Round-trip air fare, hotel and sight-seeing are included in one "package" cost.

For full information and free folders, see your travel agent. Or write to the United Air Lines office nearest you. Convenient "Fly now – pay later" plan available.

FOR EXTRA CARE AT THE REGULAR FARE–
FLY UNITED–THE RADAR LINE

(Circle number 748 for more information)

Out in the open where all can see...

Copyright 1959, American Seating Company.
American Seating products are fully covered by patents and patents pending.

American Seating brings the facts about school furniture out in the open

When you come right down to it, there is no single item in a schoolroom that gets more use by students and teachers alike than the furniture.

Doesn't this make it mandatory that any furniture you buy for your school be properly designed to promote learning instead of creating conditions that distract students and hinder good work?

That's why it is logical to expect that the *one* organization which has spent a lifetime in designing, engineering, and manufacturing school furniture is able to offer you more of everything you want and should have in school furniture. That firm is American Seating.

And these facts become all the more significant when you realize that it costs no more to have American Seating quality.

Let us give you a demonstration in the privacy of your own office. Also write for new booklet, *The Facts about School Furniture Today*. American Seating Company, Grand Rapids 2, Michigan.

AMERICAN SEATING

The standard by which all other public seating is measured

CLASSMATE® SCHOOL FURNITURE • INDIVIDUAL STUDY-CENTERS • UNIVERSAL® SCHOOL FURNITURE • ENVOY® SCHOOL FURNITURE • BODIFORM® AUDITORIUM CHAIRS • STADIUM SEATS • CHAPEL FURNITURE • FOLDING CHAIRS AND TABLES

Classmate Open-Front Unit Tables and Chairs—shown with matching teacher's desk—combine beauty and function. Colors are scientifically selected to blend with color-coordinated school interiors. Photographed at beautiful Florida Cypress Gardens.

New American Seating folding chairs with patterned vinyl-covered seats are part of a complete line that includes every major type and seat style, and embodies more features of design and construction than any other make.

American Seating unfolds the facts about folding chairs

There are three major qualities to look for when you buy folding chairs for school use: comfort, durability, and safety. Not to mention attractiveness, easy setup, and convenient storage.

You get all these features and more with American Seating "all-purpose" tubular-steel folding chairs. For, they're *engineered* for strength, comfort, and long life; carefully crafted of the finest materials; finished for lasting beauty in a rainbow of color options. And so designed that they're free from binding, pinching, and snagging hazards, and insure maximum safety in use.

You can have all the facts right at your fingertips—not only about folding chairs, but all other school furniture as well. You'll find them in our informative booklet, *The Facts about School Furniture Today.* Write for your copy soon.

AMERICAN SEATING

The standard by which all other public seating is measured

GRAND RAPIDS 2, MICHIGAN

INDIVIDUAL STUDY-CENTERS • CLASSMATE® SCHOOL FURNITURE • UNIVERSAL® SCHOOL FURNITURE • ENVOY® SCHOOL FURNITURE • BODIFORM® AUDITORIUM CHAIRS • STADIUM SEATS • CHAPEL FURNITURE • FOLDING CHAIRS AND TABLES

Send for free booklet, The Facts about School Furniture Today

Find Your Nearest Representative in the Yellow Pages

Form F6503-4—Printed in U.S.A.

dians because we feel they are a forgotten group. As the word spreads through our industry many more will adopt this policy of granting scholarships to children of custodians. I think this is a healthy trend."

How are the small firms in your community contributing to the schools?

Board posts minutes to end school rumors

The Des Moines, Iowa, schools have found a simple, but effective, way to cut down on rumors and misinformation about the activities of the school board and administration.

With a staff of 2,700 employees, Superintendent John Harris has ordered that the minutes of every board meeting be posted in each of the system's 71 buildings. The official minutes are displayed in each school office or faculty room for one week. They are then filed for future reference.

As a result, the so-called "cloak of secrecy" has been removed from the board. The minutes have a high readership among all members of the staff and have helped to greatly cut down on rumors and misinformation concerning board activities.

At the same time, the schools have inaugurated a "house organ" which carries articles of general interest to all employees. This paper has been useful both in presenting new material to staff members and in building a group feeling among employees of the schools.

Says Superintendent Harris: "I would recommend both the publication of board minutes and the house organ as a means to refute 'rumors with fact' and to build teacher morale." Although the value of such procedures may be greatest in large districts, they can be adopted successfully in any schools.

High school students tell it to Marines

When students in Carle Place, N. Y., hear speeches about the poor physical fitness of American youth, they have an apt reply: "Tell it to the Marines."

If you should follow that cryptic advice, it's likely you'd get quite an earful in return.

It seems that last fall Major John J. Swords, Marine Corps recruiting officer for the New York area, sent a circular to 330 high schools, pointing out that according to recent surveys their students were in pretty poor physical shape. Superintendent Clifford L. Rall of Carle Place, questioned this "fact" and invited the Marine officer to come out to his district and administer the regular strength test that the corp gives to its recruits.

The major visited the school to administer the test. One-hundred and thirty-six boys appeared in the gymnasium to prove their physical prowess. The average test attainment for the students was 309.7, compared to 208.5 for the average Marine recruit just reporting for boot training. After six weeks of intensive work, the Marines are able to raise their average to 313.5, just slightly higher than that of the untrained Carle Place students.

The top man in the test, which includes push-ups, sit-ups, pull-ups, squat-jumps and a 300-yard run, was a 15-year old, Michael Chernick, who scored 492 points while accomplishing 54 push-ups, 86 sit-ups, 20 pull-ups and 72 squat-jumps.

What does this prove? Certainly not that the surveys of physical fitness are wrong. The secret behind the Carle Place success is this: The district has a physical education program covering the first through the 12th grades. Every student must take part five days a week and this is done without cutting down on the academic program.

Now the question is, can your school "Tell it to the Marines"?

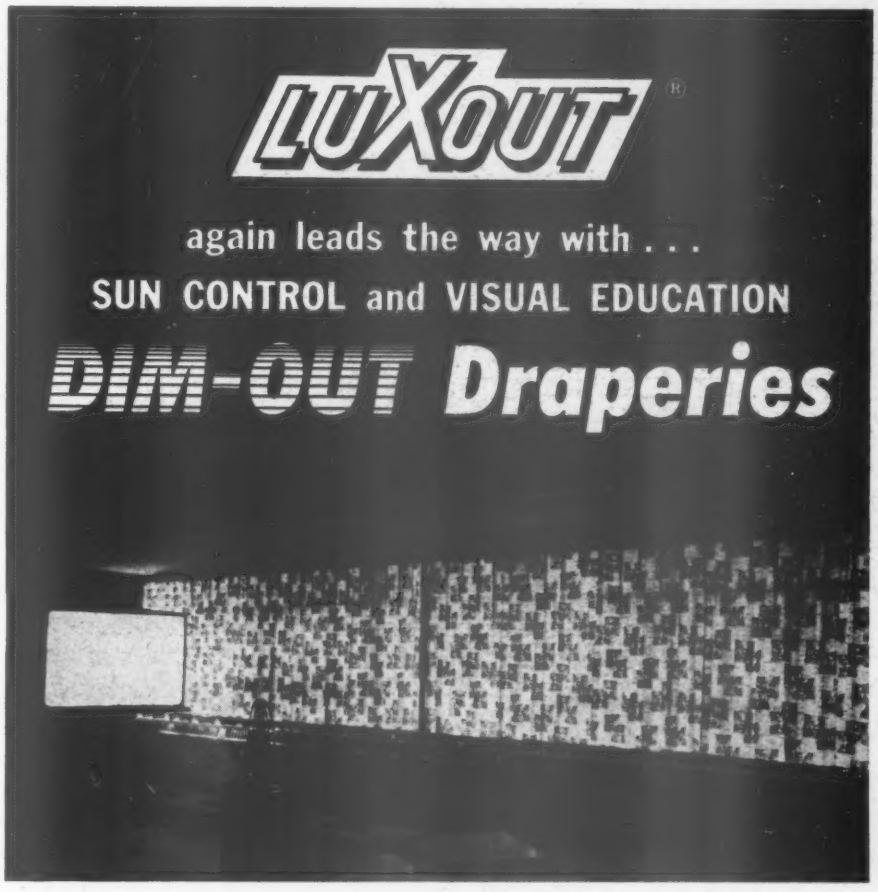


Photo above illustrates LuXout DIM-OUT draperies softening outside light to a degree that will permit classroom TV or the projection of perfect pictures on an audio visual screen. Observe that students can still take notes in this classroom.

LuXout . . . the pioneer in the light control industry

Free brochure, DIM-OUT folder and color samples available on request. Contact

Plastic Products INCORPORATED

**Department SM
1822 East Franklin St.
Richmond 23, Virginia**

(Circle number 764 for more information)

Yardsticks to help you measure

YOUR SCHOOL'S SCIENCE PROGRAM

What is a proper science program? In this article SCHOOL MANAGEMENT brings together and analyzes expert opinion on what is needed in the way of curriculum, staff and facilities.

■ ■ ■ "How good is your science program? What have you done to improve it in the last two years?"

These are the two questions a team of SCHOOL MANAGEMENT editors have been asking administrators, teachers and school board members during the past several months.

The answers have shown striking unanimity. Almost without exception, every schoolman interviewed claimed progress of some sort. But the progress—it would appear— is *not* as impressive as this statement might imply. For the most part, those interviewed reported spotty, unrelated single-course efforts to upgrade their local curriculum. Few were following any overall plan or program. Almost all expressed frustration with the lack of trained teachers to implement even their modest efforts. Many—if not most—indicated serious limitations imposed by poor laboratory facilities and equipment. Money, of course, will solve some of these problems. At this writing, a handful of states have approved Federal aid plans and begun to accept applications for grants. In some districts, the public has shown willingness to spend more for science (though often at the expense of other subject areas).

But money won't solve everything. There seems to be a general confusion as to just what constitutes a proper science curriculum. There is no evidence of a cohesive plan for improving the quality of science teaching within the context of a shortage of trained instructors.

Finally, there is a most unscientific understanding of what is needed in the way of facilities to carry out a good science program.

In the article on the following pages, we have tried to bring together and synthesize the opinions and practices of experts in each of these areas—curriculum, staffing, and facilities.

In a final section, we have listed resources available to get further help.

curriculum

"Courses which present science as a collection of facts . . . contradict the very nature of science."

"IF YOU cannot offer top-notch courses, don't offer them at all. . . . No useful purpose is served for the student, the community, or the colleges and universities by offering inadequate and poorly-taught science courses."

Thus a Joint Committee on Improvement of Science Teaching of the University of Illinois states Rule 1 for building a science curriculum in your schools.

The reason for this rule is the nature of science itself. No matter how schools subdivide it, by year and by track, science remains a *unity*. This unity is not an encyclopedia of facts, but an attitude—a devotion to search for an elusive truth, knowing that new evidence may disprove tomorrow everything we accept as fact today.

From this attitude is born the scientific method, based on hypothesis and testing, which underlies all the sciences. *A student who has not learned this method, no matter how many facts he has memorized, has not learned science.*

Courses which present science as a collection of facts, then, or which are taught by demonstration, without leading the student to question and experiment, contradict the very nature of science.

"Questions are discouraged," the Illinois committee protests, "since the teacher's background is limited. Experimentation is omitted because the teacher is suspicious of the equipment or . . . does not have it. At the end of 40 minutes of such 'science' teaching, any intellectual curiosity on the part of a youngster is likely to be stifled . . . ."

Such courses are worse than no instruction at all.

But Rule 1 is negative. What, affirmatively, should be taught? How should the curriculum be ordered? What staff is necessary? What equipment? And what resources are available to help you set up and operate the right curriculum?

SCHOOL MANAGEMENT consulted the experts. Here's what they say:

With a unanimity rare in any branch of education, experts on science education agree on this minimum goal:

Every school system should offer science instruction for every student in every grade, beginning with kindergarten. This means *every* student, slow as well as bright, terminal as well as college preparatory. Science courses should be required of every student through grade eight, with at least two additional years required during grades nine through 12. Courses and seminars should be available for students on all tracks who wish to go beyond these requirements.

This K-12 science curriculum

should be at once flexible and carefully integrated. Instruction through grade eight should be sequential, with each year's teaching based on the earlier instruction. In high school, a course in any branch of science should be taught with constant reference to other branches and to mathematics.

Even within this structure, flexibility can be achieved in two ways. First, whenever possible, science courses should be set up by tracks (or by ability groupings in elementary grades), with material appropriate to the interests and ability of each track. Each track should study its material in depth, with the same encouragement of questioning and individual experimentation.

The second way is variation in the *pace* of study of roughly uniform material. This is most feasible in junior high school, where the experts recommend a general science course lasting two years—grades seven and eight—for the average student. Bright students, however, could complete this course in the seventh grade, while slower students might continue through the ninth.

As each student completes general science, he should advance directly to higher courses. Biology may thus be studied by some students in grade eight, by most in grade nine, by the rest in grade 10.

The experts also emphasize the importance of cross-discipline use of science. In no grade should science be locked in a compartment by itself. As part of the student's total knowledge, it should be drawn into every course in every discipline.

Finally, there is general agreement among the experts on the right approach in teaching science. The NEA's Association for Supervision and Curriculum Development puts it this way:

"Good science instruction encourages group and individual activities, problem solving in areas that are significant to [students], the use of many sources of information as [students] make discoveries for themselves, the verification of ideas by experimentation and by reading from authoritative sources, and the proficient use of fundamental skills."

This definition is doubly interesting because of its context. It was written as part of the ASCD's study of science in the *elementary school!*

Elementary school curriculum

Growth with flexibility is the knottiest problem in elementary science education.

The experts agree that units devoted to science are essential in every grade. These units must be mobilized around the children's own interests, harnessing their natural curiosity. Yet these units must also provide a grade-to-grade deepening of scientific experience. Consultation among teachers seems to be the only solution.

"The wisest course," the ASCD asserts, "seems to be to build the science program around the interests and needs of children in a particular group in such a way that they will have some worthwhile contacts with several areas of science knowledge.

"The understandings which they acquire should then be made known to the teacher who will take them forward the next year. Periodically, the whole group of teachers working in a school science program should [meet to exchange ideas on] areas which need to be strengthened or emphasized and . . . experiences which are repetitious beyond the point of value."

The traditional science units are those with social implications—units on the fluoridation of water, for example, or on the city's housing and health problems. Some classes have studied soil erosion (in their own school yard!) and the science of birth and growth (by keeping a mother rabbit as a classroom pet). One highly effective unit is a study of weather, beginning in kindergarten and continuing through grade six.

But elementary school students also respond excitedly and efficiently to the intellectual challenge of pure theory. Such units are indispensible as groundwork for science in the secondary school. Typical of these units are studies of sound waves, hibernation and evaporation.

Field trips—in some cases, even camping trips—offer your students a rich source of scientific experience. *The value, however, is not in the trip itself, but in the classroom followup.* And science should never be confused with technology. A class project in building a barometer may be instructive as handicrafts, but it teaches very little science.

Opportunities for mixing science with other disciplines are limitless. For example:

Reading: science books and magazines; research in several books for information on a single topic; memorizing science words for vocabulary growth.

Writing: records of weather, experiments, care of pets, trips personal experiences; science themes for longer compositions.

Language arts: "Speaking, listening, organizing and reporting . . .," the ASCD notes, "are no longer isolated practice exercises."

Mathematics: integral to nearly all science units, especially in pure theory and in a study of weather.

Social studies: science is functional in units on agriculture, consumer education, technology and understanding how other peoples live.

Geography: the earth as a complex piece of matter, and how it supports life.

Secondary school curriculum

The Illinois committee concentrated much attention in identifying the weaknesses of current science programs. Here are its major findings for secondary schools:

- "Too much high-school science instruction is descriptive and stresses rote learning. Too little is conceptual and provocative. . . ." There is "a sense of urgency to 'cover' rather than to understand. . . ."
- "Too much high-school science instruction deals with technology and applied science at the expense of fundamental analysis of the basic ideas, concepts, and principles of science. . . . Very little is done with the philosophy, history and methods of science, or with the modern theoretical and experimental fronts. . . ."
- The courses are not challenging enough intellectually for any student, average as well as gifted.
- The courses "are too often nondevelopmental and repetitive," lacking "a soundly articulated growth" from one grade to the next.
- "Laboratory work . . . is often . . . visual education rather than a means of investigation. . . .

Sound training in the use of reference books is rare."

Turn these inside out, and you have guidelines for a *strong* science curriculum.

The standard curriculum—junior high school general science, followed by biology and optional chemistry and physics—is *not* strong. It starts too late and stops too soon, offers the gifted student no real challenge and the terminal student no instruction geared to his needs.

Grades seven and eight, the years during which most students begin to focus their interests, are very nearly a dead loss. The experts agree that the general science material now usually taught in grade nine can be taught as effectively in grades seven and eight—in fact, more effectively, since there is time for far more laboratory work.

All but the slowest students (who may need three years for general science) can then look forward to four years of more intensive science study. Most experts recommend that two years should be required for every student, three or four years for those who are gifted in science.

Various curricula have been proposed for those four years. Here is the recommendation of the American Association for the Advancement of Science:

For terminals and slow students: Grade Nine, biology. Grade 10, basic chemistry and physics.

For college preparatory students: Grade Nine, biology. Grade 10, chemistry. Grade 11, physics. Grade 12, advanced physical or biological science (optional).

For gifted students: Grades Nine through 11, same as college preparatory students. Grade 12, in lieu of advanced science, or in addition to it, a seminar for independent research.

Other experts, including the Illinois committee, also recommend a basic chemistry-physics course (sometimes called physical science) in grade 10. Some would require this of all students, however, and continue to teach chemistry and physics in grades 11 and 12—but more intensively, building on the 10th-grade preparation.

The choice between these programs (or a third solution) for your schools depends greatly on the staff and facilities you have available. But the direction is clear.

If you must choose

These suggested curriculums are minimum goals. Few schools, however, have any immediate prospect of reaching those goals. For the rest, the Illinois committee recommends emphatically "one good course instead of several mediocre ones; and this one, if well taught, might well be biology.

"It is entirely within the ability of a well-trained biology teacher to . . . bring the principles of chemistry, physics and mathematics to bear on biological principles and concepts [since] living organisms . . . develop, differentiate, live in a particular environment, reproduce and die, all in accordance with the principles of chemistry and physics."

If a qualified teacher of biology is not available, however, the school should offer not biology, but the sicence which its teachers are best qualified to teach.

No matter what the course or the track on which it is offered, laboratory work is indispensible in teaching the scientific attitude and the scientific method. Students should always do, not watch, except in the rare cases when an experiment is extremely complex or requires very expensive materials.

Special programs and extras

Considerable attention has been given to the special requirements of terminal, slow and gifted students, all of whom are thwarted by the standard curriculum.

► Courses for terminal and slow students should not be watered-down versions of college preparatory courses. Dr. James B. Conant, in his report on The American High School Today (*see SM, Feb. '59*) suggests that courses in biology and physics might be adapted to the abilities of slow learners or students without mathematical background. This is frowned on by most other experts, and Dr. Conant notes that such courses would have to be renamed—probably "life science" and "practical physics." Rather, as the Illinois committee explains, there should be a wholly new emphasis on "the history and accomplishments of science and its relation to the matters of everyday life. These courses should emphasize the major concepts, the cultural roots and the goals of science and the countless ways in which science affects our understanding of the world about us."

Such courses must include laboratory work and encourage questioning and individual experimentation. Otherwise they would not be science.

► For gifted students, the experts urge more intensive courses with more rigorous laboratory work and more individual research projects. Advanced placement courses are heartily endorsed; these are already offered in more than 200 high schools.

A seminar for the top students, continuing for two or three years and taken in addition to regular sci-

"A healthy working relationship must . . . exist between administrators and teachers at the high school level. Such a relationship, however, cannot exist unless school administrators are thoroughly familiar with the science programs and instruction in their systems. Do they really know, from first-hand evidence, whether the chemistry, physics, and biology teachers are doing an excellent, a mediocre, or a poor job? Are they able to evaluate properly requests for equipment and improved science facilities? And, finally, are they actively supporting sound science programs?

Joint Committee on Improvement of Science Teaching of the University of Illinois

ence courses, is widely recommended. Seminar students would work, under the teacher's guidance, on long-range laboratory research projects of their own choice.

Standards should be kept high for the top-track courses. (High standards automatically create ability grouping and so reinforce themselves.) Physics, Dr. Conant urges, should be open only to students with three years of math beyond the eighth grade, with at least a *C* in each course.

► For schools which are able to go beyond the recommended curriculums—and every school should aim to surpass them—many other fields of science remain to be opened. The most modern sciences, including psychology, anthropology, geology and electronics are fertile for study. These should certainly be touched on in the general science course.

A few hybrid courses, such as earth science (geology plus meteorology) are now offered in some schools; these merit wider adoption. And as advanced courses for terminal students, the field for study of applied science is virtually unlimited.

► With an increasingly complex science curriculum, the challenge to guidance officers will become correspondingly steep. Each student, the National Association of Secondary School Principals declares, must be guided to "those science and mathematic subjects that will best challenge his capacities and interests and satisfy his plans for the future. . . .

"[Schools must] *have* or *develop* broad and effective guidance and testing services and . . . *use* them as a major basis for determining a student's program of studies."

► Finally, as in elementary schools, the cross-discipline uses of science should not be overlooked. History, for example, cannot be taught intelligently without reference to the crucial accomplishments of science. Students planning for science careers must master foreign languages. Their supplementary reading might well be in science books. Students who have difficulty in English composition are often more confident in topics based on science or its applications. Assemblies or general education courses may frequently deal with science topics.

A note on mathematics

A foundation in mathematics is prerequisite for any work in science, and a weak mathematics curriculum can undermine your entire program.

The odds are that your mathematics curriculum is weak. Most of the mathematics taught in secondary schools today is more than 300 years old. The new fields developed along with modern science are rarely taught—fields such as sets and relations, mathematical logic, statistics, topology, and game and information theory.

A number of research projects, such as that headed by Professor Max Beeberman at the University of Illinois, are now creating new curricula, new textbooks and new teaching techniques. Meanwhile, the experts in science education have proposed curriculums midway between the standard and the new.

Here is the recommendation of the American Association for the Advancement of Science (*See SM, Sept. '58 for a description of a new mathematics course in use*).

For terminals and slow students: Grades Seven and Eight, a two-year sequence of general mathematics including topics from arithmetic, algebra, informal geometry and simple trigonometry. Grades Nine and 10, a full-year course in algebra (basic concepts, not the so-called social mathematics).

For college preparatory students: Grades Seven and Eight, the same two-year sequence. Grade Nine, first year algebra. Grade 10, geometry, with topics from plane and solid geometry and trigonometry. Grade 11, intermediate algebra and trigonometry. Grade 12, an integrated mathematics course of topics from college-level algebra, trigonometry and analytic geometry; the second semester might deal, instead, with probability and statistical inference. As an alternative, one semester of consumer mathematics.

For gifted students: Grade Seven, the material of the two-year sequence. Grade Eight, first year algebra. Grade Nine, geometry. Grade 10, intermediate algebra and trigonometry. Grade 11, college-level topics. Grade 12, calculus.

There is general agreement that at least one year of mathematics—two if possible—should be required of all students in grades nine through 12. For gifted students, Dr. Conant and other experts would require four years. For students planning to major or minor in science at college, four years of high school mathematics are essential.

"What is a qualified science teacher? How can you help your undertrained science teachers to develop?"

HERE, then, is the goal: a unified science curriculum extending from kindergarten through grade 12, with required and elective courses geared specifically to each track—and *no* course to be taught in any grade if it can't be taught well!

To build such a curriculum, your schools need, above all, qualified science teachers. A gap in any course, on any grade level, is serious: it interrupts the year-to-year flow of instruction which alone can present science as a single, coherent discipline.

If there are several gaps, the curriculum can disappear, leaving you with a disjointed collection of courses. The result is something like trying to teach the human skeleton, having for demonstration only a pelvis, one arm and a skull.

But what is a qualified science teacher? How do you recognize him? How can you attract and encourage him? How can you help your undertrained science teachers to develop professional competence? And what support do they all need if

continued on page 70

How to select a principal

The principal is often the key man in carrying out good school programs. He must be an expert administrator, teacher and leader. Here is what one district is doing to guarantee that it gets the best possible people for the job.

■ ■ ■ During the last few years, there has been a noticeable trend in well-run school districts, to define carefully the various jobs on the administrative staff. These job definitions may vary from district to district, depending upon their theories of school management. Almost without exception, however, the job definition of the building principal is expressed the same way—"*the primary reponsibility of the school principal is educational leadership in his school.*"

This suggests that the principal, and he alone, is responsible for putting into effect district-adopted programs of instruction. It means he is autonomous within the limits prescribed by these programs. Theoretically, no one from the central office will step between him and his teaching staff.

Obviously, it isn't easy to find these multi-skilled people who must be curriculum supervisors, coordinators of instruction, and administrators, all rolled into one. Unless some major break-through in the selection procedures followed by most districts occurs, job specification seems to be a waste of time. Some districts have created notable in-service training programs for identifying potential principals and training them for the job. Other districts do their recruiting from outside. Still others combine the two techniques.

In Covina, Calif., the school board and superintendent have developed a thorough and objective method for supplying the three to five principalships which open each year. They also have established an in-service for training and sharpening their principals after they are on the job. In this article, Superintendent Paul Salmon, presents a straight-line explanation of how his district recruits and selects its candidates. This is followed by a question and answer interview with Dr. Salmon in which SCHOOL MANAGEMENT editors have tried to clear up some of the details of what goes on "behind the scenes" when principal selection is in process.

How the selection is handled

Sometime in late winter or early spring of each year, our elementary school district determines how many principals will be needed the following year. A complete set of job specifications is sent to some 220 colleges and universities from which we recruit many teachers and principals. It is also sent to the California Teachers Association and the Los Angeles County Superintendent of Schools' teacher personnel advisory service.

At the same time, the placement offices are notified, each school in our district also receives information about the openings. This is to be transmitted to all interested employees.

The material sent out details the qualifications we consider to be important in a candidate for a principalship. Minimum qualifications are a regular administrative credential issued by the State of California, a master's degree, and five years of elementary teaching experience. We prefer that this teaching experience be both at the elementary and junior high school levels. As a part of our advertising for the job, our initial release covers the job specifications for a principal in Covina (*see box*). It also tells the potential candidate that he faces a rather formidable application procedure if he is to be considered.

As the applications come in (we

"We make it very plain to all applicants, that

GENERAL FUNCTIONS

In performance of his functions, each principal is directly responsible to the assistant superintendent for educational services. This includes responsibility for assigned personnel, for the program of the school, for democratic and cooperative planning of functions and policies with his staff. He is responsible for maintaining channels of communication, for interpreting district policy to his staff, for informing the district superintendent about matters which are pertinent to the administration of the district, for the interpretation of the educational program to parents and other citizens.

The principal is responsible for all pupil personnel assigned to his school. In discharging this responsibility, he shall establish and maintain acceptable standards of pupil behavior. He shall be aware of the needs of the students and accommodate those needs insofar as it is possible to do so.

The principal will be responsible for the efficient organization of his staff, his buildings and the materials with which he must work.

LEADERSHIP OF THE SCHOOL

The principal is responsible for using those techniques of executive leadership which insure the high morale of students, staff and parents. Through the application of proper leadership techniques, he encourages his staff to attain higher levels of professional development:

1. By affording opportunities for the cooperative solution of common problems.

2. By providing sources of professional literature pertinent to his staff's interest and needs.

3. By encouraging staff members to attend institutes and such other professional meetings as may prove helpful.

4. By providing specific visitation within the district to aid in the solution of unique problems of individual teachers.

5. By properly organizing and discharging those administrative responsibilities in such a way as to make his building function smoothly and efficiently without the expenditure of a disproportionate amount of his time which might otherwise be devoted to supervisory responsibilities.

CURRICULUM COORDINATOR

The principal is solely responsible for the implementation and coordination of district-adopted curriculum at his school level.

1. He establishes appropriate methods of communication to staff members and informs them of district-adopted programs.

2. He works with staff members to assure himself that district-adopted programs are being implemented properly in a coordinated manner.

3. He systematically reviews the various district-adopted programs with his staff.

---

had 179 applicants in 1958), an initial screening is made by a five-man committee. Last year our screening committee was composed of an assistant superintendent, two building principals, the director of curriculum and myself. Each of these five people rates each candidate independently. They use a rating instrument developed by the Los Angeles City Schools, that evaluates training and experience.

In completing the rating form, the five man committee must gather pertinent data from application forms and confidential papers. This isn't as difficult as one might suppose, since the application form is designed to supply the necessary answers. For example, "success in community activities" happens to be the first item on the evaluation instrument. On our formal application form the candidate has provided information which gives a key as to whether he has been active in community circles, such as church work, service club work, youth work or similar activities.

Weighting the applications

Each of the people on our five-man committee operates independently in order to guard against the "shaved prejudices" so often developed in committee action. When each rater has finished his evaluation form, he sends it to the personnel office. When that office has received all five evaluation forms for each candidate, it eliminates the top rating and the lowest rating given each candidate. The middle three ratings are then averaged. This becomes the candidate's rating for initial screening purposes. When all applications are in, we take the 30 highest scores for the next stop in our selection procedure. Incidentally, throwing out the top and bottom ratings, we have found, eliminates the chance of one of the evaluators playing a favorite or exerting some preconceived prejudice.

When we tabulate the training and experience section, we give our local candidates—members of the Covina school system—a 5% bonus. We feel they deserve this. At the time the board considered the principal selection procedure, the members recognized that experience in our district would be valuable to a candidate and to the district. In order to recognize the value of this experience, they authorized a 5% bonus in the category "appropriateness and recency of experience." The personnel department automatically increases the score assigned to this category for local candidates by five points.

The next step in the procedure is to give each of the 30 remaining candidates two examinations—one in elementary education, and one in administration and supervision. These are objective tests prepared by the Educational Testing Service of Princeton, N. J. The candidate must, at this point, have enough in-

these are the duties and responsibilities our principals must accept."

4. He makes a special effort to acquaint new staff members with the district programs requiring a coordinated approach.
5. He evaluates in the administrative council the effectiveness of district-adopted programs and suggests such modifications as will make them even more effective.
6. He utilizes central office staff to assure himself that he is well aware of the philosophy, materials and methods necessary to implement and maintain district-adopted program.

SUPERVISOR—MATERIALS AND METHODS

A. He helps teachers to plan appropriately for the growth of pupils:
1. By helping them to see the kind of educational program needed by children of that particular developmental level.
2. By helping them develop their skills of observation and other skills necessary for gathering needed data concerning pupils.
3. By helping them interpret standardized test results and by suggesting appropriate materials and methods for the solution of problems revealed by such tests.
4. By helping them to see that individual differences in students is normal and to be expected and by helping them make provision for such differences by the proper application of different kinds of methods and materials.
5. By helping them develop the skills necessary for interpreting children's needs and progress to their parents.

B. He helps teachers improve their skills in instruction:
1. By visiting their classrooms as regularly as possible in order to observe their instruction in a specific area of the curriculum.
2. By writing up, in duplicate, conference notes based on classroom visitations. These become the basis for an informal conference concerning the teacher's performance in the specific area observed.
3. By suggesting to teachers modifications of materials or methods which would make their instructions more productive.
4. By including problems of materials and methods in his building staff meetings.
5. By utilization of available consultant resources in those areas where he feels they would be valuable.

C. He evaluates the general competency of his staff members:
1. By assuring himself that he has secured sufficient data through visitation and observation to make the evaluative judgment.
2. By reviewing the resources of his classroom visit notes and other data in the preparation of written evaluation.
3. By discussing with the staff member his evaluation and by giving proper weight to the self-evaluation of the staff member.
4. By performing two formal evaluations of each probationary staff member during the school year—the first during the months of December and January; the second to be completed prior to the beginning of the Easter vacation period. This evaluation shall be prepared on a regular district form and shall bear the teacher's signature as evidence that it has been read. The teacher's copy shall not be signed by the principal.
5. By performing a single formal evaluation of each permanent employee to be completed prior to the beginning of the Easter vacation period.
6. By evaluating periodically the work of substitute teachers assigned to replace absentees.

PROFESSONAL GROWTH

The principal is responsible for his own professional growth. He discharges this responsibility:
1. By identifying the major area within which he wishes to extend his skills.
2. By utilizing the resources available in the district.
3. By attendance at appropriate meetings and conferences.
4. By attendance at appropriate university or in-service classes.

EDUCATIONAL LEADER FOR SCHOOL COMMUNITY

Each principal shall exert educational leadership in the community served by his school and in the larger community of the district. He will be responsible for:
1. Developing and utilizing channels of communication.
2. Interpreting the program of the school.
3. Receiving and relaying to proper sources the reaction to the school program from the community.

terest in the opportunity offered and faith in himself, to come to Covina for this examination. The district does not pay expenses of interested candidates. Each year we have had a number of candidates who have come from as far away as Michigan. In fact, two of our successful candidates last year came from that state.

When the results of these objective tests are in, we enter them on another form showing administrative selection results. This same sheet also carries the applicant's score on our previous rating and experience. These two scores now give us a subtotal that permits us to further reduce our potential candidates to 12.

The 12 remaining candidates now have a tentative ranking. This is a volatile thing, however, since their performance on the next two steps may well change their standing. About April 1, we invite the top 12 candidates to come in for a full day in Covina. Starting early in the morning, we take the 12 to one of our schools for two classroom observations—one at the primary grade level, one at an upper grade level. Candidates are told that they will be expected to evaluate what they see in the two classrooms and to make recommendations to the teachers as to how they would change things if changes are needed, or to comment on what they saw that was good, if that was the case.

The candidates are accompanied in their classroom visits by a new committee of five which will evaluate them. This is not the same committee that did the inital screening. In setting up the classroom visitations we try to reproduce conditions that would be typical of the normal classroom visitation expected of our principals when they are on the job.

After the two visits, the 12 candidates submit their observations and evaluations in writing. These papers are sent in their raw form to the personnel department where all identification of the individuals is removed and numbers assigned. The evaluating committee never knows whose papers they are rating. The committee evaluates the papers in the light of district standards. It should be remembered that they have observed the same situation observed by the candidates. The committee is made up of the assistant superintendent for educational services, the director of curriculum, two principals, and a representative from the teachers' association. Each of the committee members rates each candidate individually. Again, we have a standard form for rating classroom observation to facilitate this process. When the ratings are sent to our personnel office, it again eliminates the highest and lowest rating for each candidate in order to come up with an average score.

The personal interview

On the afternoon of the day when classroom observations are made,

we attempt to hold a personal interview with each out-of-town candidate. By seeing us on this afternoon, they can avoid spending an additional night in Covina.

This is an oral interview. First, we arrange the candidates into two groups of six each. This group appears before a committee of five. The group is presented with a "typical situation" which might be faced by a principal in one of our schools. For example, here is a typical situation we used last year:

> "Your district has not had a formal teacher evaluation program. In the spring of each year, the principal is expected to recommend to the superintendent those teachers whom he does not want to keep in his building. He merely does this by memo.
>
> At the state conference of the California School Boards Association several board members of this district attended a session on teacher evaluation and heard reports on many elaborate teacher evaluation programs, as well as much talk of the merit pay problem. As a result of this, the superintendent has asked you—as a group of principals—to explore whether your district needs to explore modification of the present procedure in evaluating teachers and, if so, to suggest a procedure for bringing about this modification."

During the next half-hour, the group of six candidates discusses this situation. While they are discussing it, the committee has an opportunity to evaluate each individual as he responds in the group, as he contributes and as he expresses himself. The committee members can determine whether he is aggressive, and grabs the ball and runs with it all the way, whether he is reluctant and defers to others, whether his ideas seem sound and well presented, whether he is considerate of other people's feelings. These discussions are exciting things. In our experience, the candidates very quickly forget that they are being observed and plunge headlong into the discussion. They make statements about education, educational philosophy and methodology, and

EVALUATING TRAINING AND EXPERIENCE

1. Success in community activities. Ability to work with individual parents, groups of parents and school patrons; successful participation in community activities related to the educational program; ability to enlist community support and participation in educational program of the school.

2. Continuous self-motivated professional growth. Evidence of alertness to opportunities for continuous professional growth and of a continuous energetic self-motivated study of educational matters.

3. Success in organization. Success in organization and performance of duties assigned, and degree of administrative initiative and general organization ability.

4. Success with employed personnel. Skill as a leader as shown by ability to secure from others their best work, to foster professional and personal adjustment of staff members, to maintain high standards of effective accomplishment in staff members.

5. Success with pupil personnel. Success in creating and maintaining effective relationship with pupils as a group and as individuals and in making effective contribution to pupil development.

6. Extent, appropriateness, quality, and recency of training.

7. Extent, appropriateness, quality, and recency of experience.

EVALUATING CLASSROOM OBSERVATION SUMMARIES

1. Organization of material. Orderliness, arrangement of material, evidence of an organized piece of written expression.

2. Written expression. Appropriateness of sentence and paragraph structure, grammar, spelling, punctuation, vocabulary.

3. Identification of the classroom learning situation. Environment, room arrangement, the learning experience (readiness, motivation, doing, evaluation), teacher-pupil and pupil-pupil relationships, classroom control and management, appropriateness of learning materials and meeting individual differences, (grouping).

4. Identification of teacher strengths. Encouraging and supporting good practices, clarity of points made, appropriateness of areas identified.

5. Identification of teacher needs. Appropriateness of the suggestions made in terms of this teacher's present growth, the immediate needs of the children observed and the use of this material in the re-employment process.

6. Suggestions for growth. Quality of the suggestions made to help the teacher in terms of their specificness, encouragement and motivation.

7. Identification of next steps in the in-service growth program. Indication of the responsibilities as to who is going to take the next step, delineation of roles, degree to which the suggested program is realistic and educationally sound.

8. Personal qualities of the writer

a. Degree of open-mindedness, sense of fair play, moral building comments, understanding of different ways to get the same results.

b. Alertness to essential points, positive and clear-cut point of view, strength of his principles.

c. Evidence of an organized way of thinking and presentation.

9. Over-all summary of the qualities shown in the written observation materials (not an average, but a general estimate)

EVALUATING PERSONAL QUALIFICATIONS

1. Appearance and manner. Is his choice of clothing and grooming appropriate for the occasion? Does he show friendliness, courtesy, poise, confidence, enthusiasm?

2. Voice, speech, and ability to present ideas. Is his quality of voice pleasing, and his speech clear and distinct? How well does he conduct meetings and speak before an audience? Is his vocabulary adequate and appropriate? Is he logical and to the point?

3. Mental alertness, creative ability and originality. Does he seem alert and responsive? Does he grasp essential points quickly? Does he understand new ideas? Does he have ideas of his own which he is prepared to substantiate?

4. Professional attitude and ethical standards. Does he show professional integrity? Does he have an acceptable code of professional ethics?

5. Ability to get along with others. Can he hold an opinion or point of view with assurance and yet with a spirit of cooperation without giving offense? Can he gain the cooperation of others?

6. Social adjustment, emotional balance, maturity of judgment. Does he appear to weigh various sides of a problem before arriving at a decision? Does he approach questions with an open mind? Distinguish between important and unimportant?

7. Overall personal fitness for the position. How do the personality and traits of this applicant, as observed in this interview, compare with the traits desired for the applicant of this position? This rating is not necessarily an average of the traits given above but an overall summary as to the personal fitness of the candidate for the position.

WT.	0	10	20	30	40	50	60	70	80	90	100
10	–	—	—	—	—	—	—	—	—	—	—
10	–	—	—	—	—	—	—	—	—	—	—
20	–	—	—	—	—	—	—	—	—	—	—
15	–	—	—	—	—	—	—	—	—	—	—
15	–	—	—	—	—	—	—	—	—	—	—
10	–	—	—	—	—	—	—	—	—	—	—
20	–	—	—	—	—	—	—	—	—	—	—

WT.	0	10	20	30	40	50	60	70	80	90	100
1	–	—	—	—	—	—	—	—	—	—	—
1	–	—	—	—	—	—	—	—	—	—	—
1	–	—	—	—	—	—	—	—	—	—	—
1	–	—	—	—	—	—	—	—	—	—	—
1	–	—	—	—	—	—	—	—	—	—	—
1	–	—	—	—	—	—	—	—	—	—	—
1	–	—	—	—	—	—	—	—	—	—	—
1	–	—	—	—	—	—	—	—	—	—	—
2	–	—	—	—	—	—	—	—	—	—	—

WT.	0	10	20	30	40	50	60	70	80	90	100
1	–	—	—	—	—	—	—	—	—	—	—
1	–	—	—	—	—	—	—	—	—	—	—
1	–	—	—	—	—	—	—	—	—	—	—
1	–	—	—	—	—	—	—	—	—	—	—
1	–	—	—	—	—	—	—	—	—	—	—
1	–	—	—	—	—	—	—	—	—	—	—
4	–	—	—	—	—	—	—	—	—	—	—

Lowest 25% of applicants being evaluated.

Middle 50% of applicants being evaluated.

Top 25% of applicants being evaluated.

give us good insight into their thinking.

Immediately following the group examination, each individual candidate has a 30-minute interview with the committee alone. At this time individual committee members may explore the reason for some of the statements made in the group session, or may ask any other question they wish to put to the candidate. Again, another rating is made on the evaluation form for personal qualifications.

The following morning candidates from Covina and surrounding communities are subjected to the same process.

The personnel office, as the last step in the selection procedure, ranks the candidates. This establishes the eligibility list from which the superintendent may select candidates for vacancies. Under board procedure, he may select any candidate from the top remaining three on the eligibility list. Out of town candidates are always interviewed prior to their leaving. Again, this is done so that it will be unnecessary for them to return to Covina should they be under serious consideration for selection.

The superintendent always interviews the individuals on the top of the list who could possibly be chosen to fill the number of vacancies in the district. If only one vacancy exists, then the top three candidates are interviewed; if two vacancies are known, at least the top four candidates, etc.

Q. The first question that comes to mind, Dr. Salmon, is the reaction of your candidates to this very grueling process. Have you ever had a

continued on page 86

Summer's the time for a

REMEDIAL READING PROGRAM

In six weeks of summer school, Cleveland's slow readers have shown a median reading improvement of six months. The cost of the program: Just $31 per pupil.

By EDNA M. HORROCKS

Directing supervisor of language arts, Cleveland

■ ■ ■ Few school districts have enough time—or expert teachers—to handle remedial reading during a normal school year. And the larger the district the greater the problem.

Since 1951, Cleveland has been conducting reading improvement summer classes, designed to give students a real opportunity to learn from the best available teachers in the field.

The reasons for poor reading skills are many and varied. Here, in cosmopolitan Cleveland, we list among the major causes:

- Homes where little or no English is spoken.
- An exceedingly transient population in many areas of the city.
- Inadequate training of students transferred from other districts.

These causes of reading deficiency may be unique to large cities, but long absences due to illness, emotional disturbances, overindulgent parents and large classes coupled with inexpert teaching are encountered in almost every school system. Reading deficiency is a real problem in all school districts. Our

question was, how could we solve it?

In 1951 we decided to make a major effort in this direction by instituting a summer remedial reading program. Students who experienced difficulties in reading were to attend school voluntarily five mornings a week for six weeks.

We enrolled 417 students that first year—all with average or above average ability. Each student had a reading retardation of six months or more.

The success of this first experiment was spectacular. The *median gain* for all pupils was six months. Almost all the students were brought up to an acceptable reading standard in this intensive course conducted under optimum conditions.

As a result of this initial success, the program has become an annual summer event in the Cleveland schools. It has grown each year, and last summer nearly 1,000 students were enrolled, attending classes in three school buildings.

Setting up a summer reading program is not a formidable job, given a willingness and an interest in the project. Here, for example, is what we did to get our 1958 program underway.

Selecting the students

Preparations for testing prospective applicants began early in the school year so that the California Test of Mental Maturity and the California Reading Test could be given in late April.

Parochial schools in the city were notified of the reading program and were invited to participate. The April tests were given to all prospective students at the same time.

The students who took these initial tests and eventually entered the reading program, had IQ's ranging from 131 down to 71. We had originally intended to take no students with IQ's below 85, but made exceptions at the request of school psychologists.

Students taking these initial tests ranged in age from eight years three months to 13 years nine months and they were enrolled in the third through the sixth grades. Almost all had retardations in reading of six months or more.

Of the 959 pupils who entered the course, 704 (73%) were boys and the largest group came from the fourth and fifth grades.

Admissions to the summer program were made on the basis of the tests given in April, as well as the recommendations of teachers, administrators and psychologists. Binet tests of intelligence quotients were administered to all students who were going to take the course, during May and June. Any children missed during that period were tested by a psychologist during the first week of school. During the first week of the summer school—which was held from June 16th through July 25th—all students were given the Cleveland Diagnostic Reading Test, and the California Reading Test was readministered. A second testing program, to measure the achievements of the summer school, was administered on July 18th.

Parents cooperate

Parents of children eligible for the reading program were contacted by letter as soon as the reading retardation of the child was confirmed. This was sometime during the month of May. Parents were notified of the opportunity offered by the summer school and were asked to sign slips of consent indicating their desire to have their children enrolled.

Parents of pupils enrolled in the reading improvement classes were invited to attend meetings at the three schools on the Friday preceding the opening of the summer session. At this time the summer program was fully explained to them.

Once school started, more individual conferences were held with parents for the purpose of discussing home background, emotional and social factors affecting learning, attendance, health habits, etc. Parents were also particularly invited to visit classrooms on July 22nd, to see their children at work.

Staffing and costs

The summer session had three basic aims. Our major objective was, of course, to give concentrated aid to those pupils of average or superior intelligence whose reading skills were not commensurate with their potential reading ability. Of almost equal importance was our desire to provide intensive training in pupil analysis and remedial reading techniques for the participating teachers. We particularly recommended that supervisory assistants who were preparing to be principals, take part in the program. A third objective was to provide in-service training for other teachers in the system by allowing them an opportunity to watch the best available teachers work in the field of remedial reading. For this purpose classes were open for visits several days during the summer session.

To staff this school of almost 1,000 students, we had 46 regular teachers (a ratio of just better than 20 to one), 17 available substitutes, eight psychologists, three principals, three clerks and a supervisor.

The total cost of the program *(see page 54)* was slightly less than $30,000. The per pupil cost was $31.15, most of it borne by the board of education.

At the start of the six-week period, parents were required to pay $6.50 tuition, with the understanding that if the child completed the

COST SHEET

Anthony Wayne, Wade Park, and Willard Elementary schools were used as reading improvement summer schools in 1958.

I Enrollments	Wayne	Wade	Willard	Total
Pupils	310	305	344	959

II Source of students				
126 Cleve. public elementary schools	310	296	313	919
8 Cleve. parochial elementary schools	0	9	31	40
Total	310	305	344	959

III Teachers and class sizes	No. of Teachers	No. of Pupils	Average Class Size
Anthony Wayne	15	310	20.7
Wade Park	15	305	20.3
Willard	16	344	21.5
Total	46	959	20.8

IV Tuition	
Initial fee	$6.50
Refund (90% attendance)	3.50
Actual cost	3.00

V Pay of principals-teachers	
Teachers—6 weeks	$ 525.00
Principals—6 weeks, 3 days	627.00
Director—6 weeks	1,017.00
Supervisor—5 weeks	684.00
Psychologist—1 week	174.00

VI Cost of program	
Receipts from tuition	$ 6,298.50
Expenditures	36,175.26
Net cost	29,876.76
Per capita net cost	31.15

course with good attendance, $3.50 would be refunded. We feel this method of tuition refunding was at least partially responsible for a daily attendance record of 94.9%. Nine out of 10 families received a refund on their tuition payments.

It should be noted here that because of increased costs we have recommended that the tuition payment be raised to $10 this year, with $2.50 being refunded to parents whose children have completed the course.

Measuring success

Just how successful were these classes? Based on tests taken before and after the course, we believe that a great deal was accomplished. Consider these facts:

- The actual classroom teaching time was a little more than a month.
- A gain in reading was made by 87% of the boys and 91% of the girls who were tested. Not all children made gains, as was to be expected.
- City-wide, the reading grade median gain for all pupils was six months reading age, or one-half of a school year. The largest gain reported last summer was two years and nine months. *(See page 84, for a complete breakdown.)*

While improved reading was the major goal of the students, other important gains were also noticed. A marked change in attitude was observed. Students gained new confidence in their ability to learn and this effected a change in their attitude toward life in general.

This was emphasized by the fact that many children who were sent to summer school had disciplinary or emotional as well as reading problems. Because of this, the pupil application stated that we reserved the right to dismiss any "unmanageable" child, but we never had reason to invoke this escape clause.

Changes in attitude cannot always be measured by paper and pencil tests, but spontaneous remarks of pupils were indicative of their feelings. Some of these unsolicited statements were:

"My hands don't sweat so much when I'm reading."

continued on page 84

Are you getting the BEST / RATE on your bonds?

By WILLIAM R. WALSH

Business Manager, Piscataway, N. J.

This district was told it would have to pay 4½% on its new issue. Here's how its board worked with other community agencies to knock the rate down, and save $133,000 in interest.

■ ■ ■ In the fall of 1956, Piscataway, N. J. was faced with the necessity of financing a $2 million high school at a time when it had already exceeded its statutory debt limit, (15% of assessed valuations in New Jersey), by a substantial margin. A $750,000 bond issue had been floated in 1955 and bonds still outstanding from previous issues brought the total debt of the district to well over $1 million. To add to the difficulty, the construction of the first sanitary sewers in the township was imminent; and the prospect of future debt beyond the $2 million for the high school was serious in view of the fact that residential developers were very active while industrial and commercial construction was moving at a snail's pace.

The result of all this was that Moody's Investors' Service, principal arbiter of municipal and other bonds throughout the country, had rated all of Piscataway's obligations as "Ba" which is the fifth classification from the top. Standard and Poor's and Dun and Bradstreet, two other national bond rating organizations, were equally dubious as to the value of Piscataway's bonds. This meant that chartered banks and stock insurance companies were extremely reluctant to hold these bonds in their portfolios and hardly likely to buy a new issue.

The school district business office found that if it issued the high school bonds under these conditions, the district would have to pay about 4½% interest on them.

Since the schedule of bond maturities extended over 20 years, this meant a total interest payment of $872,772.50. The district could not afford to spend this amount of money on interest during a period when additional classroom space and other municipal facilities and services would be increasingly needed.

We decided to try to improve our financial rating in the bond market, which would lower the interest we would have to pay on our bonds.

Despite the poor financial posi-

tion in which the district found itself, the need for the new building was immediate. The first step, then, had to be a plan to provide for temporary financing of the construction cost, pending such time as the credit standing of the municipality could be improved. (New Jersey law permits a delay in the issuance of permanent obligations of not more than three years from date of issuance of the first temporary obligation.) The board, with close cooperation from local bankers and the municipal governing body, worked out a plan which provided for prompt construction and completion of the building and allowed us a period of time to improve our credit standing before the sale of permanent bonds.

Once the temporary financing plan was implemented, the board turned its attention to the improvement of the credit position of the district. Initially, a conference of local bankers and New York bond dealers was called to explore the specific reason for the low rating placed on the district's bonds. At that conference the board learned two things of value. First, boards of education in general do a very poor job of supplying information about their districts to bond dealers for dissemination among ultimate bond purchasers.

The average investor, when faced with a question in his own mind concerning the financial status of any organization, assumes the worst unless he has available to him an authoritative answer.

Second, because of the large number of high-yield government and corporate securities available in the current market, combined with the equally large number of municipal and school issues, there is great competition for investors' money.

Since the problem of information was the one we could do most about, this had to be solved, first. Invitations were issued by the board of education to every member of the township committee, planning board, board of adjustment, sewerage authority, and all other official groups and agencies in the municipality, to attend a meeting for the purpose of planning a comprehensive brochure on the entire township.

All of these groups responded willingly and participated in a general discussion of the basic elements which should comprise such a brochure. Before the meeting adjourned, representatives of each group were assigned to present to the school board a detailed account of the work done in previous years, the present status, and the current plans in each of their areas of responsibility.

While all facets of community resources and activity were being researched, the school board business office conducted a survey of prominent bond dealers and bankers in an attempt to determine what each of them looked for in the way of information concerning a new bond issue. Each point or question raised by these people was referred to the appropriate group for a competent and complete answer to be included in the report from the representative of that group.

Some of the questions we answered, for example, were, "What is your per capita debt?" "What do your zoning laws say about the number of square feet required to build a new house, and what type of improvements are required from your builders?" And finally, "What is the nature of your population in regard to age?"

After sufficient time had been allowed for each group to prepare the report for its area of responsibility, a series of meetings was scheduled with the secretary and finance chairman of the board of education for the purpose of compiling the material in the proposed brochure. The draft copy, when completed, covered the following areas: general characterization of the township; finance; industry; commerce; planning; zoning; population; residential development; and education.

Also included in the brochure was a geographic description of the area and a map of central New Jersey showing the location of the township in relation to some of its better known neighbors. Information relative to transportation facilities, industry, recreation facilities and the complexion of the community in general was also included.

Financial information consisted of assessed valuations for the past 10 years, a schedule of outstanding debts (including the per capita figure), tax and assessment title liens outstanding, delinquent taxes receivable, tax collection rates and details on assessment policies and practices. A subsection in this category covered the project of future debt while another subsection compared the taxes paid on a $15,000 house in Piscataway with those paid on a similar house in all other municipalities in the county. It turned out that we were just about in the middle.

The third section of the brochure covered the industrial community of

BEST / RATE

The average investor assumes the worst unless he has the facts available to him

1. Assessed valuation of property taxable for school purposes showing real and personal property separately.
2. Estimated actual true or market value of taxable property.
3. Outstanding bond and note indebtedness stated separately.
4. Amount of sinking funds applicable to bond principal.
5. Amount and nature of State grants-in-aid which lessen or offset the debt burden at the local level.
6. Record of tax collections for several years showing tax rate, amount of levy, collections during the tax year, and the amount of delinquencies as to the date of the statement.
7. Tax payment and delinquent data.
8. Procedure for collecting delinquent items.
9. Population—1940 and 1950 Federal Census figures and a recent estimate.
10. General descriptions of the community. You will have to be the judge as to how comprehensive this should be.

Compiled by John M. Whitbeck, vice president, Blair & Co., Inc. for a speech delivered at the 1958 ASBO Convention in New York City.

the township, including an analysis of the facilities Piscataway had to offer new industries and the potentiality for future industrial growth. Each industry in the township was listed, with information as to the type of business, number of years in the township, appraised value of the plant and equipment, and number of employees. Photographs of the larger plants were included. Specific information on all types of transportation and the labor market was prepared and included.

The township was particularly proud of its accomplishments in planning and zoning. The main provisions of both the zoning and subdivision ordinances were included in the brochure and the complete ordinances were sent to the bond rating organizations as supplemental information. The total area of the township was broken down into the respective zones with the total acreage in each zone and the percentage of that acreage which was already developed, shown in tabular form. This section concluded with a zoning map of the entire township which also showed local, county and state roads.

For the purpose of describing population characteristics and residential development, the township was broken into three more or less equal areas and an analysis was made of the age of the population, the per capita income figure, type of housing and means of livelihood in each area. Maps of each area and photographs of typical homes were included. In addition, a table was prepared showing the number of building permits, the number of new dwelling units in each of the three above mentioned areas and the value of new construction for the past four years.

The balance of the brochure, except for notice of sale and blank proposal, covered the educational system from the caliber of the board personnel to a description of the physical facilities available. Included were photographs of most of the existing schools along with a map of the entire township showing the location of each school, the facilities contained in each and the size of each site. Projected school enrollment by grade was listed in tabular form for the period from 1958 through 1970, and plans to meet the problems created by increased enrollment were described briefly.

After all the material had been put in final form by the school business office, copies were sent to each official group in the township and to the bond department of the National State Bank of Newark for final copy reading and suggestions as to any items that might have been missed. In the meantime several New York law firms that specialize in municipal bonding were contacted so that the board could choose a date on which no bond sale had yet been scheduled. Bond

continued on page 97

HOW A SOUND SYSTEM BY **STROMBERG-CARLSON** CAN BE A PRIME EDUCATIONAL TOOL

This "SS-335" is one of many school communication systems by Stromberg-Carlson. Note the exclusive "Red Telephone" for emergency announcements.

From the central control console of a Stromberg-Carlson school communication system, you command a wide range of educational services. A few examples: current events and educational radio broadcasts • high fidelity music broadcasts and reproduction for music classes • educational television features • classroom assembly programs.

In addition, your sound system can help simplify school administration by providing a centralized means of paging students and teachers . . . making announcements . . . managing bus traffic . . . reaching any room by intercom telephone. *And the Emergency-Disaster features of a Stromberg-Carlson system are a vital means of preventing casualties and controlling panic in time of emergency.*

Our 65 years of experience in audio reproduction are your assurance of quality, dependability and low cost in sound communication equipment. There is a factory-trained Stromberg-Carlson distributor in your area to assist in selection, engineering, installation, maintenance.

"There is nothing finer than a Stromberg-Carlson"

STROMBERG-CARLSON A DIVISION OF GENERAL DYNAMICS CORPORATION
Special Products Division • Electronics Center • 1406 N. Goodman Street, Rochester 3, N. Y.
ELECTRONIC AND COMMUNICATION PRODUCTS FOR HOME, INDUSTRY AND DEFENSE

S-C STROMBERG-CARLSON | GD GENERAL DYNAMICS

(Circle number 745 for more information)

EXPLORATIONS IN EDUCATION

On ability grouping for elementary reading

On placement of students not ready for first grade

On accelerated mathematics

The following case histories were submitted by readers in districts where schools are better utilizing staff, space or time. They are presented as part of a joint project with the Teacher Education Committee of the Massachusetts Association of School Committees.

READING CROSS GROUPING CUTS RANGE, ADDS TIME

DURING THE PAST FEW YEARS the Lakewood, N. J. Public Schools have been experimenting to produce better achievement in their reading throughout the schools. We feel that if we are able to place in our high schools children who have developed good reading skills, and who understand the meaning in arithmetic, their high school success will be assured.

Our reading program begins early in the kindergarten grade when emphasis is placed upon a readiness program beginning in January of the child's first year of school. No formal reading is done in the kindergarten classes, but every effort is made to build a vocabulary and give children experiences that will ready them for the formal work which starts in the first grade.

Our first grade classes follow the usual pattern. Tests are given during the year to determine when the pupils are ready to read, and then they are placed in groups. Usually the first grade will end the year with three reading groups and it is possible that some in the lower group may still not be ready to read. The testing procedure continues in the second grade and children are split into as many groups as are needed. However, in the second grade the range of differences in reading ability widens. As you go through the elementary grades this gap becomes so wide that it is almost impossible to group children within the usual reading class according to their ability. It is this problem which gave birth to the cross grouping plan that we are using.

Cross grouping is not new. It is simply an extension of the grouping that has been employed for years in most reading classes. We have approximately 300 pupils in our third grades all attending school in one building. This is also true in grades four, five and six. Last year we took the reading achievement level as determined in our tests and sorted the 300 third grade pupils into 10 groups based on their achievement in the California Reading Test.

In the usual self-contained classroom of three groups in reading, each group receives approximately 20 minutes of instruction in a one hour period devoted to teaching reading. Teachers find it difficult to instruct 10 pupils and find work for the other 20. Various devices are used (seat work, busy work, etc.) By using the cross grouping plan each child receives an hour of instruction in reading with a group of children at his own level. The group a teacher has for reading has a very narrow range and material is adapted to each child so that each is reading at his own level.

Our children report in the morning to the normal heterogeneous group. A bell is rung and during the first hour children go to their reading classes according to their reading achievement level. At the end of the one hour reading period they return to their heterogeneous group for the rest of the day.

We have found that this program of cross grouping has improved discipline. We find our teachers are most enthusiastic about it and the children receive three times as much instruction in reading as we used to offer, with less effort on the part of the teachers. We have found it easier to challenge our better children and also easier to help those who are retarded as all children read on their own level of achievement.

The program has been so successful in our third and fourth grades that we plan to extend it to grades five and six for the coming year. Our teachers also find they can instruct larger classes in reading where the range of individual difference is narrowed.

Reported by Superintendent Hilman H. Harker, Lakewood, N. J.

JUNIOR FIRST GRADE AIDS STUDENT DEVELOPMENT

HERE IN THE FIREBAUGH, CALIF., elementary school district, we have established a room this year which

we feel has already proven its worth. We call it a junior first grade.

It was found that many children, after a year of kindergarten, were still not ready, because of emotional immaturity, to enter the first grade. The junior first grade was established to accommodate these students.

Placement is determined on the basis of motor development tests, a primary intelligence test, teacher observation and parent conferences. The class is limited to students with average and above average intelligence.

After an initial eight-week program, a reading readiness test is administered. Students who are found to be ready at that time to enter the regular first class, are permitted to do so, if teachers and parents think it is advisable. After a second eight weeks, the same procedure is followed, so that students who "catch up" anytime during the first 16 weeks of school, are able to enter the regular first grade.

During the second half of the junior first grade year, students embark on the regular first grade program.

Fourteen students in the junior first grade were advanced to the first grade during the first half year of this program. All are having excellent success in their new classrooms. Many of the students still in the junior class are expected to be able to begin second grade work at the end of the present semester.

The success of the junior first grade class also points to the plausibility of developing a reading readiness program in kindergarten for students who show they are ready.

Reported by Wynne Silver, principal and director of curriculum, Firebaugh Joint Elementary District, Firebaugh, Calif.

ACCELERATED MATH PROGRAM PAYS QUICK DIVIDENDS

IN SEPTEMBER, 1956, THE MATHEMATICS TEACHERS of the North Thurston, Wash., district met in conference to discuss the whole program of mathematics from grade school through high school. One important principle emerged from this conference; namely, that most students could complete the standard high school math courses with some degree of success, but that a substantial number of students could achieve much more if the opportunity and work were offered them.

A new program was initiated in the Fall of 1956

Here's what we're doing in our district

SUBMITTED BY _____ TITLE _____

SCHOOL DISTRICT _____

ADDRESS _____ CITY _____ STATE _____

RETURN TO: *Explorations in Education • School Management • 22 W. Putnam Ave • Greenwich, Conn.*

T'S THE VINYL

IN SIMONIZ NON-SCUFF FLOOR FINISH THAT KEEPS THIS FLOOR BRIGHT

Never needs buffing. Simply mop away water, slush, grime and dirt. Minutes later, Simoniz Non-Scuff Floor Finish comes back hard and bright as ever.

Tough, luster-holding, water and dirt-resistant *vinyl* is the secret. One quick coat creates a brilliant, self-polishing, slip-resistant finish that wears . . . and wears . . . and wears. Strips easily and quickly when required.

You're always sure of professional quality that's sensibly priced, too, because—SIMONIZ MAKES IT.

Order from your Simoniz Commercial Products Distributor, or mail the coupon today!

SIMONIZ®

FOR LONG WEAR - LESS CARE

Heavy-Duty Floor Wax • Non-Scuff Floor Finish • Super Anti-Slip Floor Finish • Triple "A" Paste Wax • Heavy-Duty Vinyl Sponge • All-Purpose Concentrate Floor Cleaner • HiLite Furniture Polish

Simoniz Company (Commercial Products Division—SCM-5
2100 Indiana Avenue, Chicago 16, Illinois

☐ Without obligation, please send details on new Simoniz Non-Scuff Floor Finish.

☐ Please send name of nearest Simoniz Distributor.

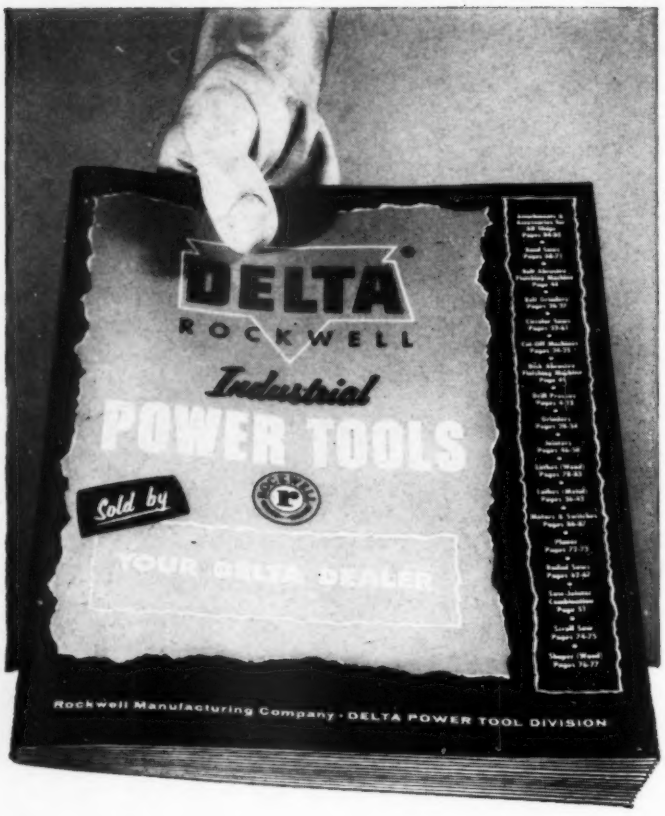
Name_____ Title_____

Firm Name_____

Street Address_____

City_____ State_____

(Circle number 742 for more information)



LET US SEND YOU THIS NEW DELTA CATALOG

. . . It puts the world's most complete line of power tools for school shops at your finger tips—offers a single source for 53 machines, 246 models, over 1300 accessories. You can choose the right tool to teach every woodworking and metalworking operation—and students learn on the tools they'll use in industry.

DELTA TOOLS ARE SAFE
DELTA TOOLS ARE PRACTICAL
DELTA TOOLS ARE ECONOMICAL

That's why: 72% of U.S. schools teaching shop teach with Delta Power Tools.

Send For Your FREE Catalog Today—Complete descriptions and specifications on every Delta tool and accessory. See the complete line at your nearest Delta Dealer and ask him about Delta's unequalled teaching aids for shop instructors . . . he's listed under "TOOLS" in the Yellow Pages.

Rockwell Manufacturing Co., Delta Power Tool Division,
416E N. Lexington Ave., Pittsburgh 8, Pa.

DELTA POWER TOOLS
another fine product by
ROCKWELL

(Circle number 739 for more information)

in grades seven through 12. It was felt that an accelerated program for the mathematically talented students could best be started in the seventh grade and then carried on through the rest of the secondary school.

Various criteria were used to choose the students for these accelerated classes. Chief among them were mathematical performance, counselor's recommendations, teacher's recommendations, and results of algebraic ability tests. A swinging door type of policy was set up, enabling students to move in or out of these classes according to their own desires, ability and performance, and the recommendation of the instructor.

The program was started by speeding up the amount of material given the accelerated group in the seventh grade, so that at the end of that grade these students had completed all of the work of the seventh and about half of the eighth.

In the eighth grade the group completed all of the required arithmetic about the end of the first semester. At this time the students were required to pass a complete examination in all grade school arithmetic and to attain a good score on the algebraic ability test. Then the eighth grade accelerated math group was introduced to elementary algebra, using the easiest text available. No high school credit was granted for this work.

On entering high school this year, all students were given the opportunity to elect algebra. The accelerated group, however, started Algebra I in a more difficult text and is proceeding as fast as they are able. In practice we are finding that this group can complete, in one school year, three to four semesters of algebra—beginning, intermediate and, in some cases, advanced.

In the 10th grade the accelerated students will cover a broader course in plane geometry and review intermediate and advanced algebra. In the 11th grade the accelerated student will complete a semester each of solid geometry and trigonometry. Then in his senior year, and this is available only to the accelerated, he will be given a math analysis course which consists of 1) a strong review of algebra and trigonometry; 2) introduction to analytical geometry; and 3) introduction to calculus, both differential and integral.

While this is, in general, a basic outline of the mathematics course for the academically talented and gifted, it is decidedly not arbitrary as to time or content. The ability and progress of each accelerated group is the determining factor in the content and coverage of the program taught by each instructor.

As the program has been in operation only three years, and then only partially, it is still too early to assess its potential value. Indicative of how this program might pay off is a recent report from nearby Washington State College concerning advanced placement of mathematics students. The report states that this year, for the first time, Washington State College has granted advanced standing to 26 freshmen. To gain advanced standing each student did outstandingly well on the mathematics placement test and passed a special two-hour examination covering the course in which credit was given. Two of the 26 students graduated from North Thurston High School.

Reported by Superintendent Charles E. Callahan, North Thurston School District, Lacey, Wash.

For all-'round deodorizing...

ROUNDS

Fragrant, laborless deodorant discs for urinals, bowls, garbage pails, lockers, closets

Deodoroma ROUNDS cost in use averages only a *fraction* of one cent a day. Rounds are formed under 70,000 pounds pressure: are dense and durable. Fragrance is locked in: lasts until the last particle has vaporized—there's no harsh "moth cake odor." Packed eight to the telescoping box—each Round sealed airtight—easy-to-shape Holzit wire holder in every box. For literature write to The C. B. Dolge Company, Westport, Conn.

For free sanitary survey of your premises ask your Dolge service man

Dependable DOLGE

WESTPORT, CONNECTICUT

(Circle number 713 for more information)

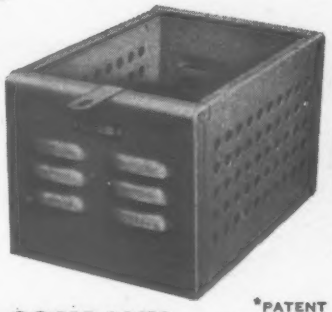
Say goodbye to "beat up" wire baskets

and the high cost of frequent replacement.

Change over to the NEW KORWIN LOCKER BASKET*

- CONSTRUCTED OF TOUGH 20 GAUGE STEEL— No sharp edges or corners.
- BAKED ENAMEL FINISH (gray, green or tan) WON'T CHIP OR PEEL.
- FITS YOUR PRESENT LOCKER ROOM BASKET RACK.
- 6-WAY CROSS-VENTILATION KEEPS CLOTHES FRESH.

For full information and price list write:



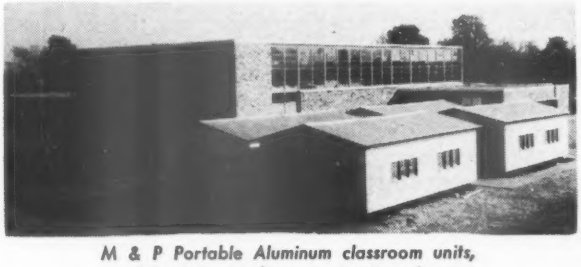
THE KORWIN COMPANY

*PATENT APPLIED FOR

Distributors of Korwin Products

1196 STOUT ST., DENVER 4, COLORADO

(Circle number 722 for more information)



M & P Portable Aluminum classroom units, supplementing inadequate structure in rear

BUILT of durable Alcoa aluminum lined with plywood, these portable classroom buildings cost only about one third of conventional construction, and we can offer IMMEDIATE DELIVERY. These are mass-produced at our Beaumont, Texas, plant, where we have pioneered the manufacture of portable buildings.

A size of 16 by 30 feet is recommended, but other sizes are available. Finish is usually corrugated, but other styles may be furnished. These buildings are READY FOR USE on delivery.

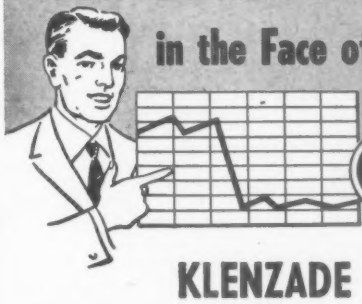
For your particular needs
WRITE, WIRE OR CALL

M & P BLDG. SALES CO.

General Offices: **2397 Railroad Ave.**
Beaumont, Texas
P.O. Box 3367 • *Tel. TE 3-6358*

(Circle number 729 for more information)

How To Trim Food Service Expenses in the Face of Rising Costs



KLENZADE TAILOR-MADE COMPLETE SANITATION PROGRAMS

Qualified Klenzade Technicians will make a complete survey of your food operation and set up sanitation procedures and schedules to meet your particular conditions. Klenzade will teach your kitchen personnel to "keep it clean . . . and keep it longer." Why not take advantage of this unique Klenzade service that adds new zest to your food, cuts costs, and freshens up your entire food facilities.

What You Get! Sparkling equipment, dishes, glasses, utensils. "Out-of-doors" atmosphere, free of "scullery" odors. Fresh clean food flavors — smiles instead of complaints. Elimination of detergent waste, over-use, duplicated products, inefficient cleaning.

Write for Information on Complete Sanitation Survey

KLENZADE PRODUCTS, INC.
BELOIT, WISCONSIN

Visit our booth—Nat. Restaurant Show

(Circle number 755 for more information)

RCA ANSWERS YOUR QUESTIONS ABOUT A LANGUAGE LABORATORY

Just what is a language laboratory?

It is a foreign language practice room or part of an existing classroom devoted to the study of the conversational aspects of the language. It supplements regular classroom work and develops students' skills in speaking the language and understanding native speakers.

What makes it better than methods now employed?

For one thing, present methods don't allow for much drill in speaking, and at the end of even two years of modern foreign language study, few students can hold a conversation with a native. With the language laboratory, students receive 10 to 20 times more practice. At the end of two years an average student should be able to respond fluently to from *500 to 750* questions spoken in the foreign language.

What form do practice lessons take?

Most language teachers have decided on the "Listen-Respond" system, in which students listen to pre-recorded tapes, and respond orally during pauses in the tape. This establishes, in effect, a one-teacher, one-student relationship which is ideal for learning. Once language teachers have the laboratory program running smoothly they have more time for regular classroom work and more time for individual students.

What equipment is necessary?

For secondary school use, one of four basic RCA systems will provide every necessary function without investing in elaborate and expensive equipment. Each RCA system can be enlarged without limit by simple addition of more units. Each student has his own semi-soundproof booth containing a transistorized amplifier, microphone, and headphones. Up to 10 language "channels" can be used simultaneously. RCA equipment is extremely inexpensive to install, operates at a safe, low voltage, and permits monitoring, two-way communication between student and teacher, and recording of students' responses for testing purposes.

How do I find out more?

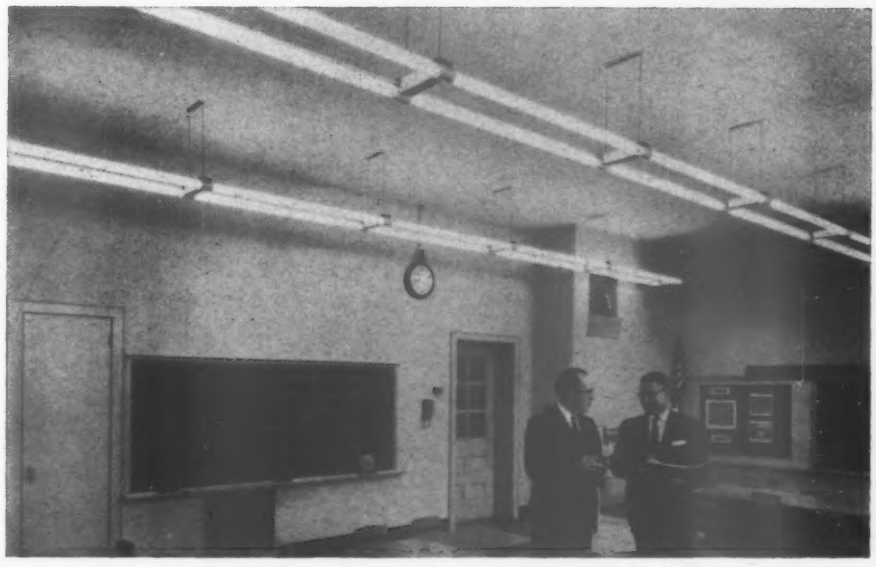
A postcard or letter to Radio Corporation of America, Language Laboratory Sales, Dept. T-110, Camden 2, N. J., brings an informative illustrated brochure. Send for yours today.

RCA Tmk(s) ®

RADIO CORPORATION of AMERICA
LANGUAGE LABORATORY SALES
CAMDEN 2, NEW JERSEY

(Circle number 735 for more information)

How we relighted our old schools



Author Samuel Mather (left) checks illumination level with Lighting Engineer Arthur Talbot, in classroom of one of Trenton's relit school buildings.

Poor lighting was making schools obsolete until an inexpensive way was found to relight them.

By SAMUEL W. MATHER

Superintendent of buildings and grounds
Trenton, N. J.

■ ■ ■ Like many other school systems, the Trenton, N. J. public schools have been faced with the problem of keeping old schools going while putting considerable time and money into the addition of new facilities.

A particular problem for us has been the modernization of the lighting systems in the old schools. It has been clear to me and my staff for a number of years that we were ultimately going to have to replace the incandescent fixtures which were making the old buildings gloomy and hard to work in. The need was particularly great in the junior and senior high schools where demands on eyesight are the heaviest and the working day the longest.

As early as 1949 we began experiments with fluorescent lighting, which appeared to offer a chance to step up lighting levels without increasing the amount of electricity used. This consideration was important to us for two reasons: We did not want to increase our operating budgets if we could avoid it, and, in certain buildings, we did not think it was safe to add materially to the lighting load on wiring put in as much as 40 years ago.

Unfortunately, the first fluorescent fixtures we tried were standard types with egg crate louvers or some other form of shielding. Although our lighting was improved immediately, we found that we were creating new problems as fast as we were solving the old ones. Our system consists of 22 schools. We have a maintenance department of 24 men responsible for maintenance throughout the system. It quickly became apparent that the fluorescents we were experimenting with were going to demand more attention than we could afford to give them.

Tubes, starters and ballasts were burning out in the new fixtures with surprising speed, and handling the egg crates and other shielding required a considerable amount of the time. We also found that the various shielding devices caught dust and thus introduced a new problem—that of keeping the fixture clean.

We believed fluorescent lighting was the answer to our basic problem but the fixtures we were trying to use did not seem practical for us.

As a result of these problems we continued to study the situation, looking for a solution that would be acceptable from cost, lighting, operation and maintenance standpoints. Our efforts were spurred when we

TERRAZZO . . .

BEAUTIFUL FLOORING
WHEN IT'S SEALED WITH
HUNTINGTON TERRAZZO SEAL

The beauty of terrazzo endures—*if* Huntington Terrazzo Seal is used to protect the floor. Even after years of hard wear, a Huntington-protected terrazzo floor will maintain its original color and beauty! Huntington Terrazzo Seal provides a non-slippery, waterproof surface. It simplifies maintenance, preserves the surface against excessive cracks and chipping, and prevents damage from improper cleaning methods.

Easy to apply, Huntington Terrazzo Seal dries in twenty minutes. Floors can be used after 4 hours. Dirt, or even grease and chemicals, won't harm or stain terrazzo or marble that is protected with Huntington Terrazzo Seal.

Let The Man Behind the Drum, your Huntington representative, help you plan your maintenance program for all floors in your buildings. Write for his name today.

Huntington Terrazzo Seal:

- Exceedingly durable.
- Dries in twenty minutes, ready for use in about 4 hours.
- Protects all terrazzo and marble floors.
- Provides a safe, non-slippery floor surface.
- Protects floors from stains.
- Prevents damage from improper cleaning methods.

HUNTINGTON LABORATORIES

HUNTINGTON, INDIANA

Philadelphia 35, Pennsylvania — Toronto 2, Ontario, Canada

WRITE TODAY FOR FREE INFORMATION AND PRICES

HUNTINGTON LABORATORIES, INC.
Huntington, Indiana

☐ Please send me more information on Huntington Terrazzo Seal.
☐ Please have your representative call.

NAME _____ TITLE _____
SCHOOL _____
ADDRESS _____
CITY _____ STATE _____

(Circle number 719 for more information)

Halls, as well as classrooms, were benefited by the improved lighting.

received numerous complaints in 1955 from a mechanical drawing teacher that the lighting for his intricate work was giving him unsatisfactory results. His need for better lighting was so clear that we began traveling to other schools in a search for a new workable solution.

In Reading, Pa., we found an installation that provided bright, even lighting without glare. Best of all, since it had been specially designed with school requirements in mind, it had none of the conventional crating or shielding.

After seeing this installation in operation we checked with local consultants and spent considerable time with representatives of the Ainsworth Lighting Co., the manufacturer. This company had conceived the idea of "balanced brightness" in designing incandescent fixtures for schools and carried the same approach into the design of their fluorescent fixtures.

The company's Budgetlite fluorescent units are low brightness and so spaced in relationship to each other and to the ceiling (which is used as a reflector and diffuser) that the brightness on all sides of the tubes is nearly equal. As a result, objectionable glare from the bare tubes is, for all practical purposes, eliminated, as glare from automobile headlights is eliminated when they are seen in daylight.

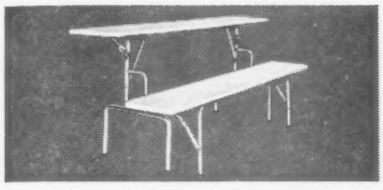
We took this lighting system into the room where the mechanical drawing teacher was having vision difficulties. For good measure, we raised the lighting level to an average of 50 foot-candles maintained. Many of our old schools were, by actual test, receiving only four to

NEWS ABOUT
multi-purpose use of space
...WITH HOWE FOLDING MOBILE TABLES

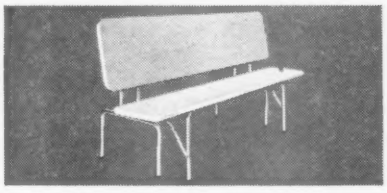
Solves Feeding-Seating Problems in 3 Seconds!

CAFETERIA AUDITORIUM SEATING IN 1-2-3!

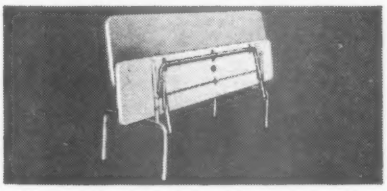
NEW HOWMATIC "C" TABLE-BENCH



1—A positive lock secures the HOWMATIC "C" in this cafeteria table-bench position *automatically!* Fingertip pressure releases the accessible lock at the table's end. *The HOWMATIC "C" converts to bench with angled backrest instantly!*



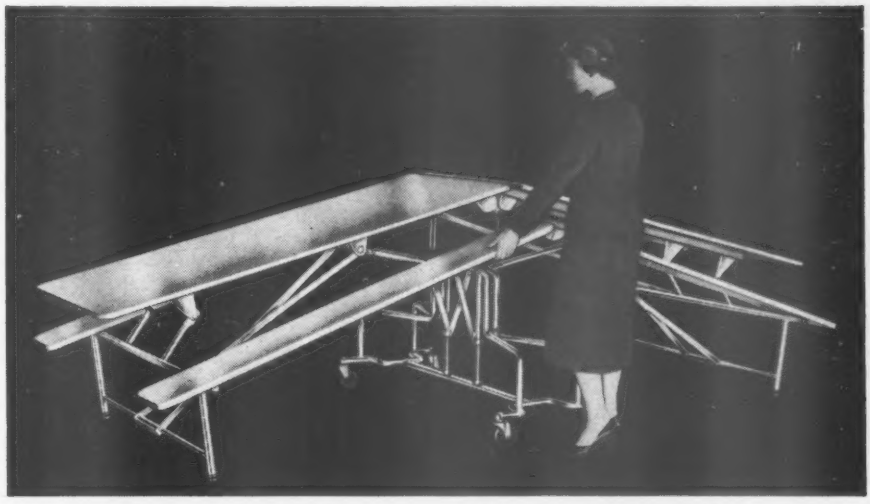
2—In this auditorium bench position, the HOWMATIC "C"'s backrest is low; little children see over it easily. 6 ft. model seats 4-5 people; 7 ft. unit seats 5-6. (Available with prayer kneeler at slight extra cost).



3—Compactly folded, the HOWMATIC "C" stores in little space. Also available with 3" swivel casters (at slight extra cost), it quickly rolls out of the way.

Benchless "cousin" to the HOWMATIC "12", this HOWMATIC "T"'s Unique Floating Action makes the unit almost effortless to open or close. The center, castered legs touch the floor at all times. The 4 corner legs touch the ground only when the HOWMATIC "T" is fully opened. This anchors it firmly where placed, eliminates opening and closing drag, makes the HOWMATIC "T" almost effortless to operate.

New HOWMATIC "12" Bench and Table opens or folds in one, easy motion!



THE new HOWMATIC "12"* Bench and Table opens or folds in one, easy, automatic motion! Unique Floating Action keeps the four corner legs off the floor during opening and folding. Fully opened, however, these legs grip the floor, anchoring the HOWMATIC "12".

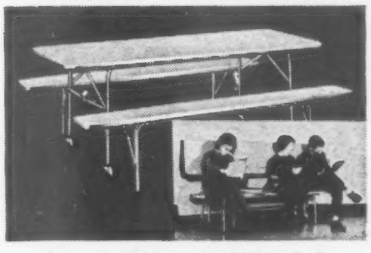
Even in small areas, the HOWMATIC "12" is compact and maneuverable. Folded, its four large swivel casters make the unit easy to move in any direction. This special maneuverability means more units can be efficiently stored in a given area.

Table and bench surfaces are completely exposed for easy cleaning even after folding. This feature—exclusive with the HOWMATIC "12"—*cuts cleaning time and costs up to 50%,* speeds conversion of multi-purpose rooms.

Design simplicity provides maximum comfort without leg obstruction; the HOWMATIC "12" seats 16-20 persons.

*Pat. Pending

(Inset) Converts to bench with backrest instantly!



Fast and Easy to Operate!

HOWMATIC "6" Dual Bench and Table

Roomy enough for 8-10 people, the HOWMATIC "6" is ideal for small and medium feeding operations. Easily operated by a woman. With table folded and *one* bench open, it's a bench with backrest ideal for perimeter seating, circular arrangements and assemblies. Rolls easily on casters.

HOWE FOLDING FURNITURE, INC.

1 PARK AVENUE, NEW YORK 16, N. Y.

Manufacturers of a complete line of standard folding tables and trucks. *If it folds—ask HOWE!*

Free!

Get complete data on (1) new HOWMATIC "12" Bench and Table, (2) new HOWMATIC "C" Table-Bench, (3) new HOWMATIC "T", (4) HOWMATIC "6" Dual Bench and Table—plus HOWE *standard* folding tables. *Act now!*

Name_____ Title

School_____

_____

Address_____

City_____ Zone State

SM-59

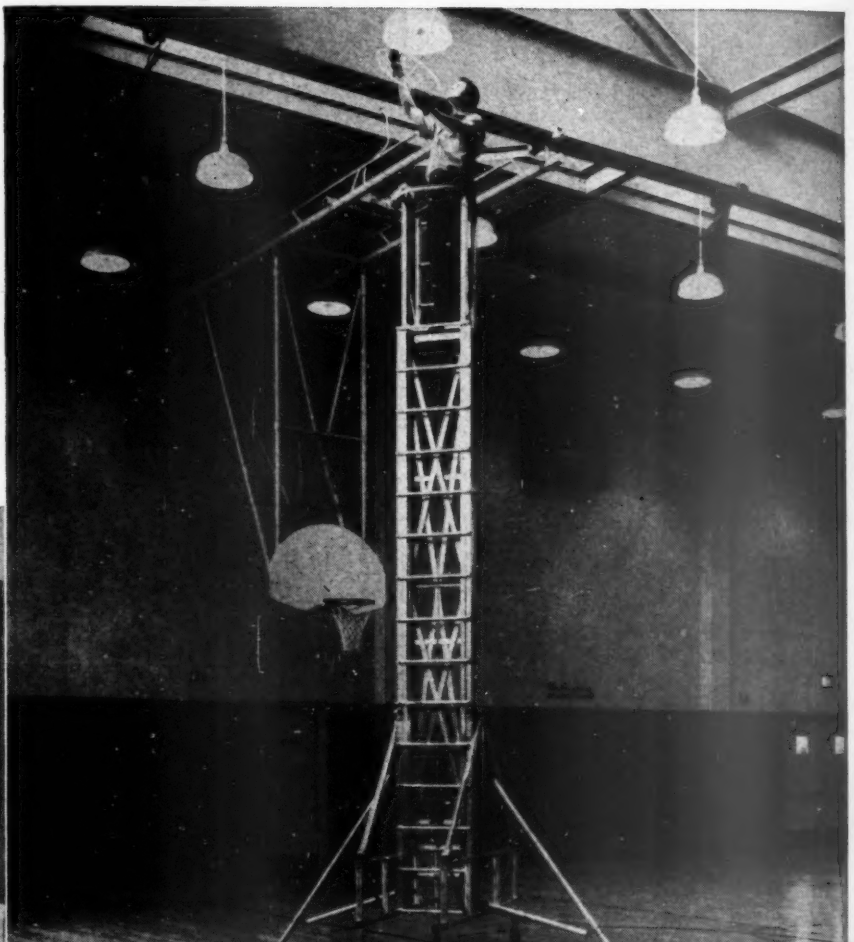
(Circle number 718 for more information)

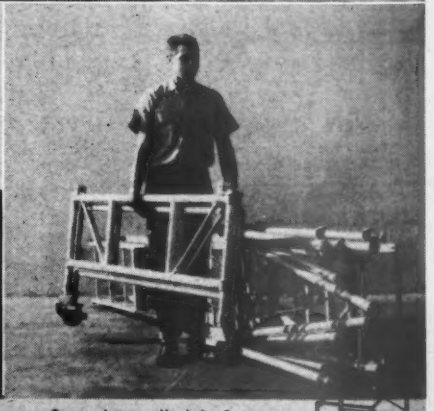
UP-RIGHT ANNOUNCES A NEW WORK PLATFORM

TALLESCOPE

...telescoping aluminum structure for overhead spot maintenance

Lightweight, rapidly assembled by one man. Extends instantly for reaching heights up to 30 ft. Telescopes for rolling under trusses and other obstacles. Adjustable legs for uneven floors or stairways.





Rolls through doorways . . . only 29" wide, telescopes and folds down.

Bridges over auditorium seats.

Separates easily into 3 components for convenient storage or transportation.

FOR TALLESCOPE CIRCULAR WRITE TO UP-RIGHT SCAFFOLDS

UP-RIGHT SCAFFOLDS • DEPT. 180 • 1013 PARDEE ST., BERKELEY, CALIF.

MANUFACTURED BY UP-RIGHT SCAFFOLDS

(Circle number 749 for more information)

six foot-candles from our old lighting systems.

The effectiveness of the new lighting was confirmed by the mechanical drawing teacher who actually wrote a fan letter to the school board, praising our department. Soon after, we installed the fluorescent lights in other rooms and got similar reactions.

As soon as we saw the results of these test installations we arranged to completely relight three elementary schools. We also partially relit the high school, two junior highs, an elementary school, and the administration building. Even the school board's own meeting room has now been equipped with fluorescent lighting.

We believe that we have derived five specific advantages from these bare-tube fluorescents:

1. Simply designed, they are economical to install.
2. The amount of light provided in our old buildings has been dramatically increased from around five foot-candles to 30, 35, or 40 foot-candles.
3. Consumption of electricity, according to records available at one school for a two-year period, has not been increased at all. (Efficiency of the fixtures runs around 96%.)
4. The tubes have not required any replacement to date, in some cases as long as three years. Incandescent lamps usually had to be replaced every four or five months.
5. Other types of maintenance (cleaning, servicing, etc.) have been reduced to nearly zero.

Thinking back on our experience, we have only one word of caution. Since the fixtures are designed to create a balanced brightness, ceilings must be kept clean so that they can function properly as reflectors and diffusers. This is no problem in well maintained schools, of course, but it should be part of the record.

What we have found as a solution for the problem of relighting old schools may seem radical to many officials. The feeling against using fluorescent lighting without the usual shielding devices is still fairly widespread and goes back to the first glaring days of fluorescent lighting. But through the experience of living with it in a number of our schools, we find that it has pleased teachers, students, and board members alike. **End**

NOW! *a Whiteprinter for Schools*
THAT WILL EARN AS STUDENTS LEARN!

It was designed with schools in mind! Compact Bruning Copyflex Model 300 provides all the versatility and big printing width of a large, expensive diazotype reproduction machine—at a price to fit school budgets.

As Students Learn. Now your engineering and drafting students can make and see their own prints of their class projects. Right in the class room, they can make sharp, black-on-white diazotype prints in seconds of a drawing or tracing up to 30-inches wide by any length. They gain valuable experience with all of the drafting and reproduction techniques involved with such materials as intermediates and film overlays.

Copyflex Will Earn. You can utilize the versatile Model 300 for fast, labor-saving reproduction of student transcripts and a wide variety of school records, reports, charts, and memoranda. You type information only once on ordinary translucent paper. Add information or change it on originals. Make Copyflex copies when required. Copyflex Model 300 is clean, quiet, odorless . . . requires only a 115-volt AC connection.

You owe it to yourself and your students to investigate the remarkable "300" by mailing the coupon below.

See the Bruning Exhibit in SCHOOLROOM PROGRESS U.S.A.

BRUNING Copyflex

Send for Your Free Copy!

Charles Bruning Co., Inc., Dept. S-DBD
1800 Central Rd., Mount Prospect, Ill.
Offices in Principal U.S. Cities
In Canada: 105 Church Street, Toronto 1, Ont.

☐ Please send me my free booklet on Copyflex Model 300.
☐ Please have your local representative call on me.

Name_____ Title_____
Company_____
Address_____
City_____ County_____ State_____

(Circle number 710 for more information)

Yardsticks to help you measure

YOUR SCHOOL'S SCIENCE PROGRAM

continued from page 46

they are to teach at their most effective best?

Elementary school teachers

The purpose of science units in elementary grades is not so much to teach facts as to introduce students to the scientific method. The students' questions boomerang: from asking *Why does this happen?*, they are led to ask *How can we find out?* For this reason, the ASCD points out, "children's questions in science do not require technical answers. The teacher's function is to help children find answers to their own questions in ways that are sound."

The elementary school teacher, then, requires a highly specialized type of science preparation. He must, of course, understand the scientific principles on which his units are based, or to which his students' far-ranging questions might lead. To help students focus their curiosity, he should be able to translate these principles into examples from the everyday world around them.

But above all, he must understand the *kind of thinking* children must do—the kind of thinking to which he must lead them—if they are to find their own answers to the questions they ask.

The experts agree that a perfectly adequate technical background in science is within reach of all college undergraduates who plan to become elementary school teachers. The ASCD, for example, endorses a general standard of "20 hours of science in a four-year college program, distributed among earth science, physical sciences, biological sciences and methods of teaching."

But few undergraduates reach for it. The Illinois committee notes that "many elementary school teachers have had no more than eight semester hours of science, and that in biology exclusively. As a result, teachers as a rule feel extremely uncertain about science. Many of them dislike it. If such teachers teach science at all, it is likely to be solely a reading activity."

Understanding the thought-processes by which one discovers the scientific method is far more difficult. It requires, in effect, that the teacher-to-be observe his own thinking carefully in his own first contact with science. This is usually long before college; since scientific observation in general is slighted in elementary and secondary schools, it rarely takes place. Even in college, students tend to concentrate on answers, rather than on the mind itself as it wrestles with the problems.

Courses in the teaching of science attempt to make up this deficiency. Both teachers and students on the university level, however, find it difficult to recapture the primal innocence and enthusiasm of the elementary school student on his first scientific quest. As a result, such courses tend to concentrate on teaching materials and methodology. These are important, of course, but not quite to the point.

For some years to come then, school administrators will be wise to assume that no new elementary school teacher they hire, and few of those now in service, really understands how science should be taught.

There are two remedies—two ways of diffusing throughout the faculty the skills of the few teachers who do teach science well. The first is by workshops, especially (the ASCD suggests) those "that provide a wealth of facilities, an atmosphere conducive to free exchange of ideas, opportunities to plan the work cooperatively and assistance in developing material for the classroom."

In-service programs featuring science demonstrations may also be useful, so long as they are for information, not imitation. To demonstrate science is not to teach it.

The second remedy, which is gradually attracting national attention, is the use of a science consultant—an expert science teacher whose full-time job is to share his knowledge with his colleagues. The ideal consultant, as defined by the Illinois committee knows "how children approach science topics, the kinds of experimentation that might be expected of them, and their concept formation." He is also "extremely familiar with science instructional materials designed for the elementary grades."

The consultant works both behind the scenes and before the class. He works with individual teachers and workshop groups to outline units and design teaching materials. He helps them with equipment, reference sources and illustrative materials; recommends and plans field trips; and arranges for visits to the school by scientists in the area.

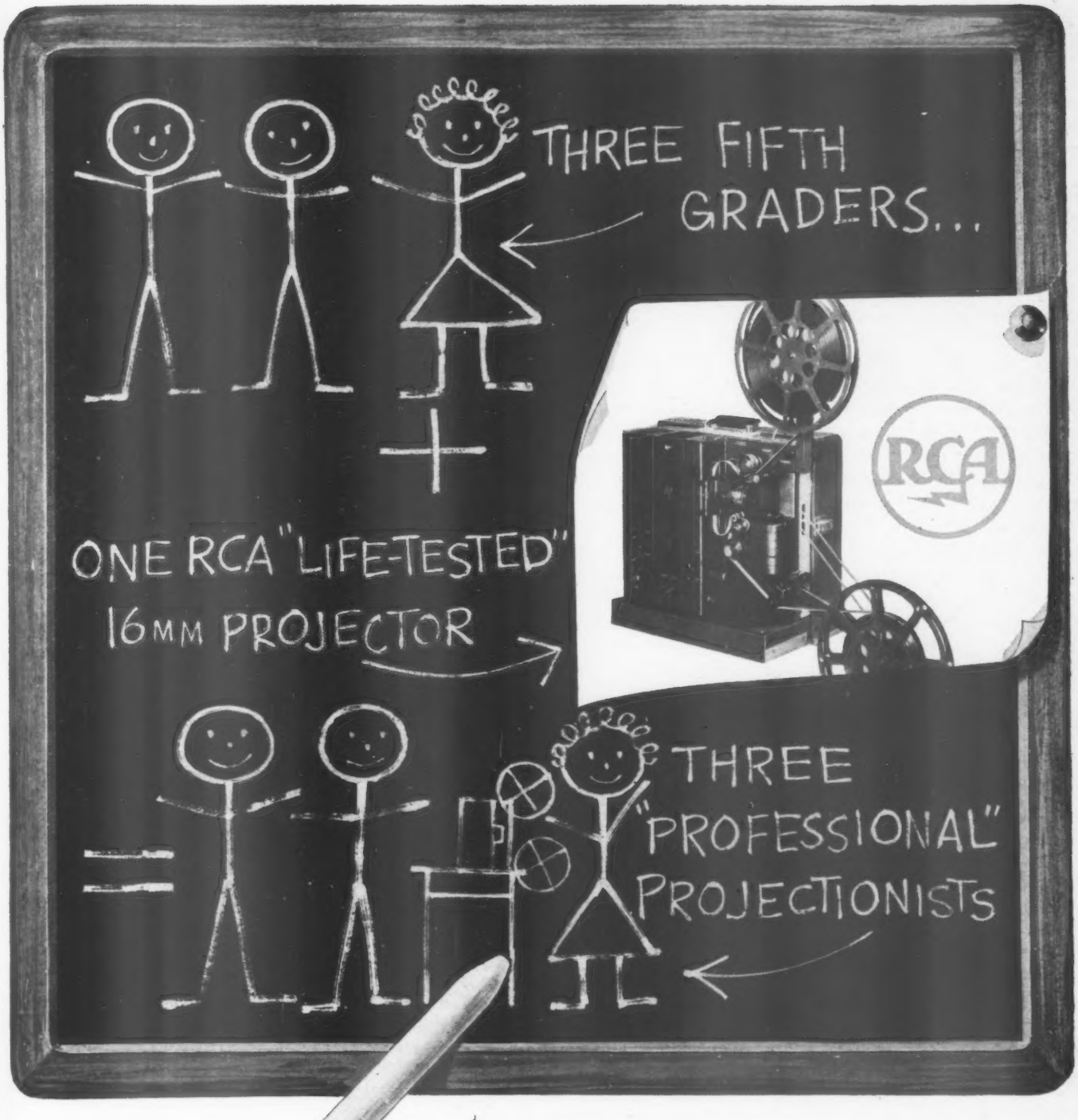
In the classroom, he may assist the teacher at difficult points, such as starting a new unit. He may stay longer "with the teachers who need him most . . . [but always] for the purpose of demonstrating to the classroom teacher some useful approaches in the teaching of science." He never dominates the class; the classroom teacher remains in control.

When time allows, the consultant may work with small groups of science-gifted children. He may also advise the administration on securing equipment and supplies. But whatever he does, as his primary objective, "the consultant creates a setting for concentrated attention to the quality of science teaching."

Secondary school teachers

The two most important qualifications for a secondary school science teacher are competence and enthusiasm. Competence means knowing his subject matter and how to teach it. Enthusiasm means liking his subject and communicating that liking to his students.

But enthusiasm, in turn (the Illinois committee notes), depends on "a thorough-going knowledge of the subject. . . . If the teacher is to instill lasting interest and enthusiasm



RCA "Life-Tested"* 16mm Projectors are the only projectors with features engineered for one single purpose . . . operation so easy that the greenest amateur can roll a show with sight and sound as perfect as you'd expect from a professional projectionist.

"Life-Tested"* 16mm Senior Projector

Easiest film threading of any 16mm machine, designed for 1200-watt lamp to throw maximum light on screen, lubrication built in, powerful two-case model for big-area duty.

"Life-Tested"* 16mm Junior Projector

New pressure guides hold film with feather touch, easiest film threading ever designed, 1200-watt lamp throws most light on screen, compact one case model.

Look, listen and operate one at your RCA Audio-Visual dealer's or have him come and demonstrate. He's listed in your Classified Directory under "Motion Picture Equipment and Supplies."

Ask him too, about new RCA "Scholastic" record players and tape recorders designed especially for rugged school use.

**Rigid endurance standards have been set for RCA "LIFE-TESTED" Projectors. Individual components as well as finished projectors are subjected to continuous testing to evaluate the durability and efficiency of all operating parts. "LIFE-TESTED" at RCA means better, more reliable performance from RCA projectors.*

RADIO CORPORATION of AMERICA
AUDIO-VISUAL PRODUCTS • CAMDEN 2, N.J.

Tmk(s) ®

(Circle number 734 for more information)

into the student, he must be a scientist as well as a teacher."

Or to put it another way: *the science teacher must be equal to the demands made on him by the gifted student.*

This is a tall order. To fill it, the secondary school science teacher needs an intensive college-level science training. Beyond this, he should keep continually in touch with new developments in his field—through professional journals, conferences, and advanced courses or field experience during the summer months.

Perhaps the clearest available guide to college preparation was issued early this year by the American Association for the Advancement of Science. According to the AAAS, an undergraduate who plans to become a secondary school science teacher should devote about 60 semester hours—half of his four-year total—to the sciences and mathematics. The emphases within these 60 hours should be clearly related to his teaching specialty. He also needs, for perspective, a solid training in the humanities and the social sciences.

The AAAS recommends these *minimum* programs of science training,* in addition to professional courses:

Teacher of general science	
Biology	10 hours
Chemistry	8 hours
Physics	12 hours
Earth sciences	6 hours
Mathematics	6 hours
Advanced work	18 hours
Teacher of biology	
Biology	30 hours
Chemistry	12 hours
Physics	8 hours
Earth sciences	3 hours
Mathematics	6 hours
Teacher of chemistry	
Chemistry	28 hours
Physics	8 hours
Biology	8 hours
Earth sciences	3 hours
Mathematics	12 hours
Teacher of physics	
Physics	25 hours
Chemistry	13 hours
Biology	6 hours
Earth sciences	3 hours
Mathematics	13 hours

**For teachers of mathematics, the AAAS recommends these minima: junior high school teachers, 24 semester hours of mathematics and 12 hours of science; senior high school teachers, 30 hours of mathematics and 18 hours of science. The mathematics for both groups should go beyond calculus.*

Few teachers with even these minimum qualifications are found in science classrooms today. Courses are frequently taught by teachers who have not even minored in the subject. And a minor isn't enough. In biology, for example, the Illinois committee observed that many courses are assigned to teachers—frequently coaches—who are unprepared for the subject and not even particularly interested in it.

"Teachers of biology with minors in that field are often inept or uninspiring. . . . As long as majors in other fields teach biology 'on the side,' these courses in general are going to be nothing more than textbook and workbook courses with very little imagination, ingenuity, or interest on the part of the teacher and very little achievement on the part of the student. Administrators should exercise care in staffing to ensure that such situations do not arise."

Nor does training end with college. Scientific knowledge changes so quickly, with new evidence constantly reversing things we had taken for granted as facts, that even a qualified science teacher can be outdated in a few years unless he continues to learn.

Year-round study and intensive summer work in his field are important for every science teacher. For the unqualified teacher—the teacher, for example, who is "filling in" on a science course—such studies are essential.

During the school year, study is limited primarily to professional journals, conferences of professional organizations (such as the National Science Teachers Association), in-service programs and occasional university courses.

In the summer, wider academic programs are possible—and emphatically recommended. Undergraduate courses may be very productive, especially when they treat sciences other than the teacher's specialty, and the experts believe that salary advancement regulations should take this into consideration. Workshops for science teachers are offered by the National Science Foundation, General Electric, Westinghouse, Shell Oil and other large corporations.

The classroom is not the only place to learn. Practical work in research or applied science (as in industrial laboratories) and independent programs of study or research are widely endorsed for summer training. Here the schools can help: New York City, for example, has experimented recently with placing science teachers in technical jobs in private and government industry during the summer months.

Salaries and administration

"It is absolutely necessary," the Illinois committee declares, "that [science] teachers have professional standing in the subject they teach and be given an opportunity to remain in contact with the moving frontier through appropriate educational opportunities. The salaries for secondary school teachers must be adjusted to retain and procure this level of professional quality."

Here are three sets of figures. As you read them, keep your teacher-salary schedules in mind:

- An engineer in any field, fresh out of college, can expect an average starting salary of about $5,750 a year.
- A chemist or chemical engineer, fresh out of college, with only a BS degree, will start at $5,400 to $6,000.
- The same chemist or chemical engineer, with an MS degree, will start at $6,600 to $7,200.

These figures are slightly more than a year old. The salary picture has probably brightened somewhat since then.

To compete for these graduates—a number of whom would like to teach science, if they could only afford it—your salary schedules must be realistic. Experts generally agree that a minimum starting salary should fall between $5,000 and $6,000 a year. Ceilings should be flexible, or follow industry trends. Salary increments should be geared to advanced work in the sciences, as well as professional training, and should be large enough to be real incentives.

Advance to higher salary schedules should also be more flexible. In particular, the requirement of a master's degree should be relaxed, and recognition given to the value of undergraduate courses. Bloom Township High School in Chicago Heights, for example, accepts 35 semester hours of credit beyond the bachelor's degree, if approved by the

AIRKEM ANNOUNCES NEW SCHOOL PROGRAM TO ASSURE HEALTHIER ENVIRONMENT

Are you prepared to fight this kind of absenteeism?

You will be with the new Airkem program. Because here is the first feasible and economical approach to environmental sanitation in the school field. Here's what it will do for you:

Provide complete 3-way cleaning in one operation

Reduce danger of cross infection

Cut pupil absenteeism due to sickness

Lower maintenance materials costs

Increase custodial staff efficiency

Add an air-freshened effect to stuffy crowded indoor areas.

Old and new schools alike across the country are adopting this new scientific approach to developing a healthier school environment. A single demonstration on a "you-name-the-area" basis is usually all the proof that's necessary. Take your choice of gym, locker room, cafeteria, restroom or ANY OTHER AREA that's creating a problem. You'll see the results in the gleaming brightness of a room that's truly clean. There's not a trace of dirt or soil-film—Disease-causing bacteria are destroyed. Even the air itself has a rain-washed freshness.

Your satisfaction with this new program is guaranteed by your local Airkem representative. He's a trained specialist backed by years of experience in environmental sanitation. As an independent business man, his future depends on pleasing you. He's only as far away as your 'phone. Why not give him a call? Or, if you'd prefer, just fill out the attached coupon and we'll do the rest.

A Healthier Environment through Modern Chemistry

airkem

AIRKEM, INC. S-59
241 East 44th Street
New York 17, N. Y.

Gentlemen: I want to know more about your new Program.

☐ Send details ☐ Have representative call

Name_____

Title_____

School_____

Address_____

City_____ Zone____ State_____

(Circle number 765 for more information)

THE NEW IBM/SERIES 50...THE COMPLETE ACCOUNTING SYSTEM FOR SMALLER SCHOOLS WITH GROWING ENROLLMENTS

A complete punched card system, IBM **Series/50** gives you —at lower cost—all the advantages of control and economy enjoyed by larger schools, colleges, and universities using IBM systems. Its applications and procedures are compatible with any sized IBM system. So, as enrollments grow, your **Series/50** can grow with you.

With IBM **Series/50** you can enjoy all these advantages in your school record-keeping operation:

- free teachers from clerical tasks
- provide more complete records at no extra cost
- create neat, legible reports
- centralize record keeping
- make available information for guidance counseling
- obtain a wealth of useful by-product reports and statistics

Beside processing student records, **Series/50** helps you expedite payrolls, personnel records, appropriation accounting, property accounting, supply requisitioning, and inventory cost accounting.

Like all IBM Data Processing equipment, **Series/50** may be purchased or leased. For complete details, call your local IBM representative.

superintendent, as equivalent to a master's degree for salary purposes.

Even with realistic salary schedules, qualified science teachers on all grade levels will probably remain in short supply. The small school should aim for at least two qualified teachers, one each for the biological and physical sciences. Occasionally schools may be forced to share qualified teachers, perhaps across district and county lines. This is always preferable, however, to using unqualified teachers.

In the face of this shortage, the experts find it absurd that qualified teachers are not given the facilities or even the time they need to teach. The Illinois committee sums up the prevailing reaction:

"Too many science teachers work in inadequate laboratories and classrooms, with inadequate equipment and budgets, with too many distracting extracurricular responsibilities not related to the job they should be hired for—masterful teaching of science.

"We therefore recommend: that administrators take the initiative to remove [such] conditions . . . and to provide optimum conditions for science teaching."

"A course which attempts to cover a science subject without laboratory work . . . is not a science course."

THE first and most essential of these "optimum conditions" is adequate science facilities.

Elementary school "teachers need all the resources they can marshal," the ASCD declares, "if they are to teach science well—if science is to be something children do and not merely something they can read about. . . . Teachers consider lack of materials and equipment their greatest difficulty in carrying on a science program."

This is even truer in the higher grades, where formal laboratory work is indispensible. A course which attempts to cover a science subject without laboratory work, the experts say, is not a science course. Reading and demonstrations cannot teach the scientific attitude and the scientific method.

Facilities alone, of course, can't work miracles. Their function, the Scientific Apparatus Makers Association notes, is to "remove insofar as feasible all restrictions on learning in your science rooms. Naturally, facilities in themselves cannot make an honor student of every boy and girl. Facilities will not correct ineffective teaching, but they will enable the *competent* teacher to accomplish more."

But what *are* adequate facilities—of space, apparatus, supplies and instructional materials? How do you choose them? And how much do they cost?

Elementary school facilities

To develop the way of thinking which is science, elementary school students must carry through experiments—sometimes imitating the teacher, more often in their own fashion (though under the teacher's guidance). This means, if not a school laboratory, at least some classroom space identified year-round with science projects.

"Children like a science room of their own," the ASCD explains, "because of the interesting things that they do there, or failing that, they like a science corner in their classroom—a table or other space to work and some shelves for storage." As the teacher encourages each child to find the research project which especially challenges him, the "science table or science corner is often the spot where these individual differences can operate most fully.

"The center serves as a kind of cafeteria from which the children may choose various kinds of equipment to use in solving a problem or . . . in devising new experiments. Sometimes there are new materials to smell, to feel or to taste, or specimens from which to choose for one's own special collection."

Reasonably adult apparatus should also be provided. The Illinois committee comments that children "have a new sophistication today about things scientific. Through television, excellent children's books, and adult conversation, they are more familiar with the tools of science than we sometimes realize. They are not confused by real motors, real stroboscopes, and real galvanometers."

The materials need not always be professional. Science can often be studied through the everyday world: toys may illustrate scientific principles, and common plants, rocks and animals are invaluable resources. Science units should use them.

Commercial science kits are also available, and many of them are excellent. The ASCD commends them for several reasons: they save time and storage space; their materials and equipment are carefully selected; and they provide helpful manuals of instruction. But these should be supplemented with "local collections, [which] offer more opportunity to meet local needs and to introduce some aspects of life science into the science center."

Not a great deal of money is needed—though more than is now generally provided. "Some school boards," reports the Illinois committee, "spend three cents per [elementary school] pupil per year for science supplies, exclusive of books. Others spend as much as 25¢. In contrast, it is not unusual for school districts to spend $1.25 per. . . . pupil per year for a subject like art whose importance has already been recognized."

What *is* essential is not to confuse economy with quality, or handicrafts with science. The Illinois committee acknowledges sadly the "widespread belief that all equipment should be of the 5-and-10-cent-store variety. If a barometer is needed, make it from a milk carton. If a motor is needed, make one from wire, nails, an eye dropper and a cork. If a galvanometer is needed,

make one from a coil of wire and a compass.

"The point that is overlooked is that some of these very clever devices take many hours to construct. . . . Is it economical to save five dollars [for a stroboscope] and then have the teacher work an extra three hours? [Or if it is a class project:] Granted, there is a place for children's construction activities in the elementary grades. But let's not confuse this with science."

Finally, an important adjunct of the science center is the science reading library. Children should be encouraged, the experts declare, to seek answers to their questions by piecing together information from a variety of sources. (This, of course, encourages reading as well as an interest in science—an excellent example of cross-disciplinary opportunities.)

Great care should be exercised in the selection of books and magazines. Some are excellent; but the Illinois committee cautions that many are "either superficial or . . . emphasize the applications of science to the exclusion of material that is considered fundamental today."

Rather than books which "stress such topics as how refrigerators, engines and water pumps work, or which birds are to be found in the north during the winter," the school should seek out books and instructional materials which "help the child explore in depth some truly significant phases of science at his own level [and which encourage him] to make comparisons, raise key questions, hypothesize, [and] test hypotheses."

Secondary school science rooms

Designing a science laboratory or a combination classroom-and-laboratory, or remodeling an existing one, is a highly technical challenge which deserves the close attention of your school architect, *working with one or more manufacturers of science equipment*. Don't trust the local millwork company to build critical equipment—even if it sounds like a bargain.

Such basic problems as where to locate the room require extensive general experience as well as detailed knowledge of local conditions. And relatively minor details may turn out to be of crucial importance. How many administrators are aware, for example, that "reagents should be stored in a room separate from delicate balances and physics apparatus which might be damaged by corrosive chemical fumes"?

Only an expert familiar with your specific needs can help you achieve realistic economies, while protecting you from crash budget-cuts which may, in the long run, drain your budget or make further expansion disheartenningly expensive.

What follows here, then, is not a blueprint for your science rooms, but a summary of the ground-rules.

Before your architect can begin drawing up plans, two basic decisions must be made. The first depends on your enrollment; the second on whether a single large area is or can be made available.

Multi-purpose or single-purpose? If your enrollment is under 500 students, it may be necessary for each of your science rooms to accommodate more than one course—general science and biology, for example, or chemistry and physics. In very small schools, one room may have to serve for all sciences.

If your enrollment is 700 or more, separate science rooms may be more practical. A very large school, the SAMA suggests, might even "add a science wing . . . or construct a separate building for all science rooms."

Combination or split? The old-fashioned science layout, split between two rooms—a classroom and a laboratory—is yielding rapidly to the combination room, in which the classroom and laboratory form a funtional unit (*see drawings on pages 77 & 78*). Such an arrangement provides more floor-space for each pupil, yet requires less total space than the equivalent two rooms.

The combination science room, whatever its specific layout, must meet certain minimum standards. It should, the SAMA observes, provide "adequate work space for students, a layout that assures efficient supervision and administration for the teacher, and ample convenient storage for all materials and apparatus."

One manufacturer adds that all areas should be usable 100% of the time, with a minimum traffic flow, and should be easy and economical to maintain.

The location of science rooms within the building should be determined by more than a tape-measure. The SAMA notes, for example, that some windows in the biology room should face south to permit direct sunlight exposure for plant growth.

A first floor location offers direct access to the outside growing area for plants and easy transportation for laboratory materials to and from the building. An upper floor location provides easy access to the roof (for meteorological, astronomical and radio projects) and simplified ventilation of the chemistry room.

Room size is directly related to class size. A fair rule is to allow 35-40 square feet per pupil, apart from separate storage rooms, preparation rooms and darkrooms. Your average class size should be kept to 25 students, if possible, with no classes ever exceeding 30.

Now your architect can reach for his T-square. Knowing the size and location of your combination science room, and what subject or subjects will be taught there, he can begin to lay out a floor-plan which integrates several key areas into a functional unit. Here are his building-blocks:

Student work areas: Each student needs a work area at a laboratory table, with ample room for individual work, but with his neighbors close enough for multi-student projects. Gas, variable electricity and water should be within each student's reach.

Demonstration area: Here the students' tablet-armchairs are grouped around the instructor's demonstration table, which he uses when an experiment is unusually simple or hazardous, or when it involves delicate apparatus. Here also are conducted chalkboard lessons and tests.

Special project area: Here students work, individually or in groups, on independent research projects.

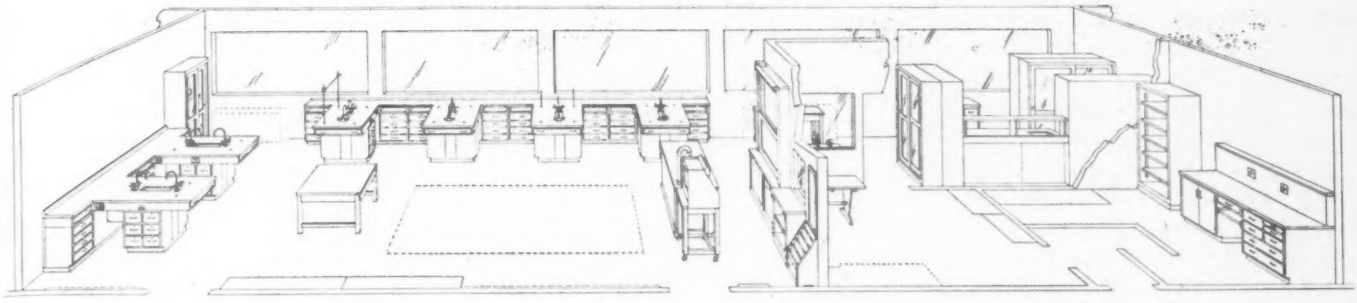
Teacher's desk and conference area.

In addition to these key areas, several others may be considered extremely important. These include the **preparation area** (a separate room for building large displays, repairing apparatus and storing special materials) the **reading area** and the **display area** for student exhibits. A **darkroom** and/or **botanical growing area** may also be very useful.

Storage facilities are of prime importance. If insufficient or poorly-

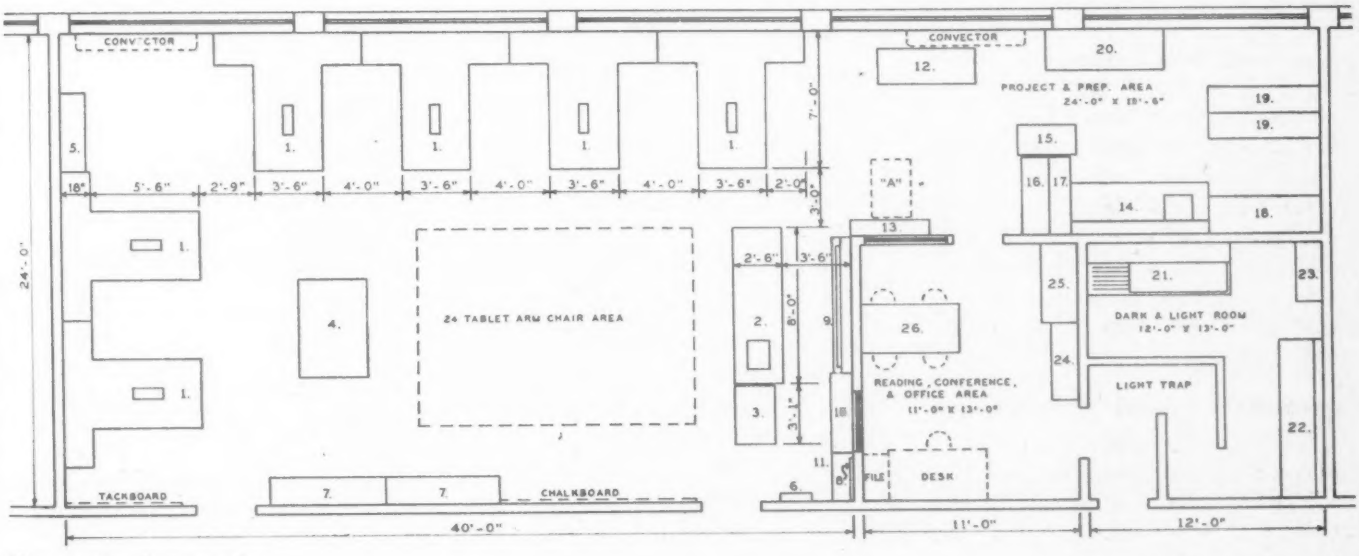
Combination chemistry and physics laboratory

Class capacity—24 students



This combination chemistry-physics laboratory-classroom is equipped with six four-student perimeter tables to accommodate 24 students for laboratory sessions. The tables shown provide locked student drawers for three sections of chemistry if students work individually, or drawers for six sections if students work in pairs. Other base units may be substituted at either the wall or student portion of the tables if desired. Two book compartments are provided in the apron rail of the wall tables, and the student table apron rails have a full length glassware storage drawer at the aisle end and a rod storage compartment.

The reading room and office, the darkroom and the project and preparation area are all accessible from the corridor without disturbing classes in session. Because of this, each of the service areas can be used 100% of the time. An additional feature of these service areas (except the darkroom) is the windows in the separating walls, which allows easy supervision. It should also be noted in the plan that separate areas are provided for chemistry and physics storage, so that corrosive chemical fumes will not damage balances and delicate physics apparatus.

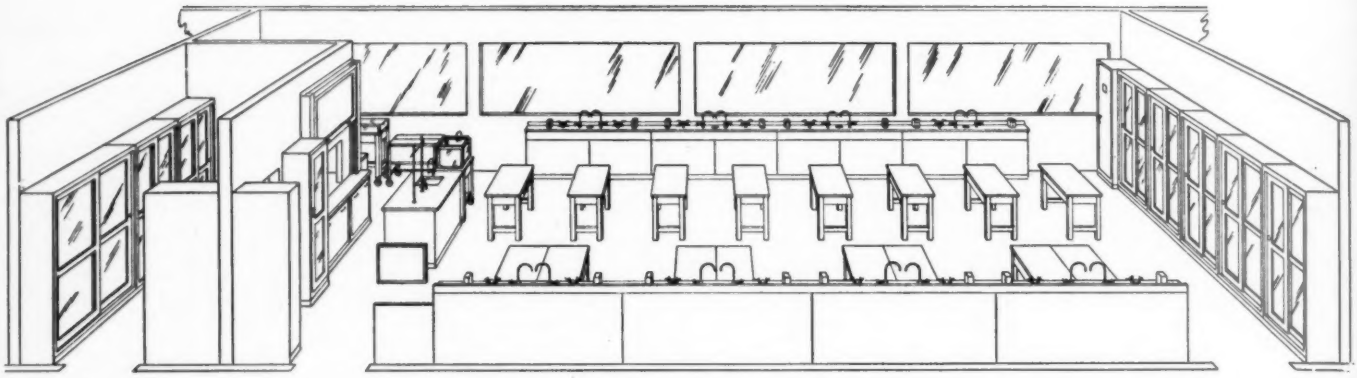


Plans courtesy Kewaunee Co.

Item No.	Quan.	Description	Item No.	Quan.	Description	Item No.	Quan.	Description
1	6	Four-student perimeter tables	10	1	Book shelves	19	2	Chemistry storage cases
2	1	Instructor's demonstration table	11	1	Magazine rack	20	1	Apparatus bench
3	1	Flexihood assembly	12	1	Movable utility project table	21	1	Darkroom developing table
4	1	Movable utility table	13	1	Wall service table	22	1	Darkroom printing table
5	1	Physics storage and display case	14	1	Preparation table	23	1	Storage case
6	1	Key case	15	1	Laboratory chart	24	1	Book storage case
7	2	Physics storage and display cases	16	1	Physics storage and display case	25	1	Instructor's wardrobe and storage
8	1	Bulletin board	17	1	Chemistry storage case	26	1	Conference table
9	1	Triple chalk board and chart storage case with projection screen	18	1	Project storage and display case	"A"		Alternate project table location

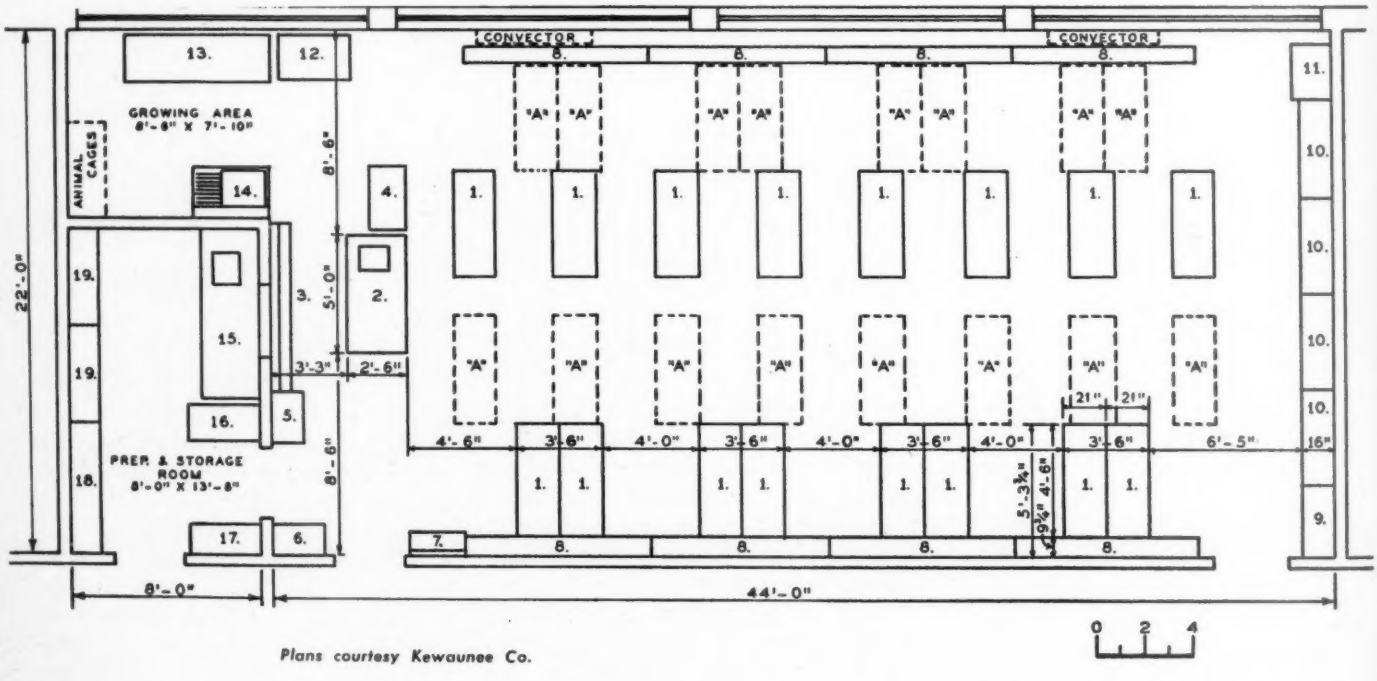
Biology and general science laboratory

Class capacity—32 students



A science classroom for biology or general science can quickly become a "perimeter" type laboratory by simply sliding two of the movable tables to each wall service table. This allows a maximum of flexibility in laboratory-classroom arrangements with the 32 students either facing the instructor for classroom demonstrations, or grouped adjacent to the wall service tables for laboratory experiments. The triple chalk board has the rear fixed panel omitted to provide a "pass through window" into the preparation and storage room from the lecture area. Chart storage cases are provided below the triple chalk board, and a projection screen above to facilitate the use of projection type visual aids.

A separate storage and preparation room and a growing area are provided at the left side of the room. The preparation and storage room would also be excellent for project work since ample storage space is provided for storage of projects in process. The alcove for the growing area is convenient yet somewhat separate from the laboratory-classroom. Ample storage and display cases are provided in the classroom itself, as well as in the storage and preparation room so this room may be used for other science courses if desired. Physical science, life science or earth science are other courses that could be taught in this room.



Plans courtesy Kewaunee Co.

Item No.	Quan.	Description	Item No.	Quan.	Description	Item No.	Quan.	Description
1	16	Two-student tables	7	1	Magazine rack and bulletin board	14	1	Wash-up sink
2	1	Instructor's demonstration table	8	8	Wall service tables	15	1	Preparation table
3	1	Triple chalk board and chart storage case	9	1	Storage and display case	16	1	Laboratory cart
4	1	Aquarium	10	4	Storage and display cases	17	1	Storage case
5	1	Skeleton case	11	1	Herbarium case	18	1	Storage case
6	1	Storage and display case	12	1	Movable soil bin	19	2	Storage cases
			13	1	Movable germinating bed			

placed, they can wreck the most efficient floor-plan and lead to costly damage of sensitive apparatus. Storage for chemistry materials requires very careful planning.

While school science programs are certainly not dangerous, it is prudent to build safety into your science room. First aid kits should be easily accessible, and in chemistry rooms, fume hoods and fire extinguishers are an important precaution. Since water is used frequently, floors should be non-slip when wet.

Now, what does all this cost?

Once the bare space for a science room is available—with the wiring, plumbing and other preparation completed*—the SAMA estimates these average costs for basic furniture, delivered and assembled:

General science room	$6,000
Biology room	6,700
Physics room	9,600
Chemistry room	12,600
Preparation room	1,450

(These are estimated costs as of June 1958. They include laboratory tables, benches, cabinets, fume hoods, desks and certain other furniture, but not apparatus and storage space.)

** This preparation may add up to 50% of the total expense.*

Apparatus, supplies, materials

A qualified science teacher knows the tools of his trade. From the myriad of constantly-improving apparatus and supplies on the market, he can choose skilfully and economically those that best suit his purposes, for instruction and for his students' independent research projects.

The soundest rule for purchasing apparatus and supplies, then, is: *give him a budget—and give him his head.* The budget, in turn, should be realistic in recognizing his needs.

What is realistic? The SAMA estimates these average (not generous) budgets for outfitting and stocking a new science room:

	Small school	Medium school	Large school
General science	$1,245	$2,360	$4,335
Biology	$3,235	$5,685	$8,240
Physics	$3,475	$6,275	$8,925
Chemistry	$2,450	$4,450	$7,200

Annual replacement costs will, of course, be slightly lower. They should be sufficient, however, to permit every student to conduct his own experiments throughout the year in every course.

When necessary, small schools should pool their expensive apparatus in order to keep their budgets free for supplies. Even the best teacher, the experts observe ruefully, can do little but demonstrate and lecture if his shelves are bare of essential materials, such as chemicals or microscope slides.

The qualified teacher also knows how to use audio-visual equipment to save time, clarify his instruction and encourage enthusiasm. His resources should include not only the usual chalkboards, tackboards and charts, but also an overhead projector, a television set and projectors for films and slides.

Textbooks and workbooks, while they can never be the core of a science program, remain highly important. As a general rule, any science textbook over 10 years old is outmoded. Continual use of reference books is also vital in any science course. The school library should own a generous selection of really good reference books—not only popular-interest volumes—as well as magazines devoted to science.

"Your schools aren't alone . . . help is available . . . the job can be done."

A UNIFIED and flexible science curriculum extending from kindergarten through grade 12, with each course taught by a qualified teacher with adequate facilities. . . .

Sound impossible?

It might be, if your schools were isolated, off in a corner, with no one to help point the way and no one to help shoulder the load.

But your schools *aren't* alone. And it *can* be done.

Financial aid

For nearly a year, the National Defense Education Act of 1958 has been law. Certain of its key provisions, however, have taken a while to implement. Among these are authorizations for Federal grants, channeled through the state governments, to help communities improve their school science programs.

Two types of grant are of special importance. The first encourages schools to buy and install laboratory and audio-visual equipment, printed materials (except textbooks) and various types of supplies for science, mathematics or foreign language teaching at any grade level. The second encourages schools to develop supervisory or related services in these subjects. (States or local communities must match Federal grants under these programs dollar-for-dollar.)

The Federal aid log jam is now breaking, and these funds are starting to flow. At present, according to the American Textbook Publishers Institute, the Federal appropriations average $2 per public school pupil. They are available for *your* community, and they make possible a giant start toward adequate science facilities for every elementary and secondary school.

But your financial resources don't end here. Funds and foundations, colleges and universities, industry and technical societies are all potential allies. A few offer direct financial support. Most are willing to share valuable personnel and facilities at little or no cost to the school.

The National Science Foundation and various educational funds provide scholarships for advanced training for science teachers. And ingenuity can pay special dividends in a direct foundation grant. Central High School in Evansville, Ind., for example, persuaded the National Institute of Health to grant $2,300 for research in amino acids. The research was conducted after school by five science-gifted students.

Industry is giving substantial sup-

port to science programs in many communities. A number of companies, says the Illinois committee, "have been willing to share personnel qualified to teach science with the schools, subsidizing a part of the salary for time spent in teaching."

An exceptionally generous pattern for school-industry liaison has been set by the three-way program of the Hughes Aircraft Co. in southern California: 1) summer employment for high school science and mathematics teachers; 2) lectures to high school science classes by Hughes scientists; and 3) a summer research project in Hughes laboratories for outstanding high school students.

Universities may also provide financial resources, especially as administrators of educational fund grants. Occasionally they may themselves provide expensive facilities, such as the $25,000 science laboratory (with scaled-down equipment) which the Kansas State Teachers College in Emporia contributed to an affiliated elementary school.

Curriculum development

Your schools' main resources for curriculum development are college faculties, community scientists and engineers, science presentations developed by national organizations and—for elementary schools—your own qualified secondary school science teachers.

College faculty members—both scientists and professors of education—are often willing to serve as consultants in developing science programs on every grade level.

Scientists and engineers from the general community may be invited directly into the classroom, or classes may more profitably visit them in the field. Such men, the ASCD finds, "are usually eager to help and with direction they are often highly effective in . . . helping [students] acquire important understandings."

These resources may be especially helpful in project research seminars for gifted students. "The trick," says the Illinois committee, "is to stimulate, to encourage, and to provide resources for the gifted student, who sometimes will move beyond the teacher's knowledge. The teacher should utilize the community's resources of specialized knowledge by bringing medical doctors, laboratory specialists, engineers, chemists, etc., into the program to assist the student researchers. Help from college and university faculties should also be obtained either directly or through correspondence."

In Pittsburgh, industry consultants and several local technical societies are providing an intensive course in automation, electronics and instrumentation for top science and mathematics seniors. In Delaware, the state section of the American Chemical Society operates a Summer Science Day Camp for advanced students throughout the state. Tuition is just $25 for the four-week program.

Science presentations for various grade levels, both for science classes and for general education, have been developed by dozens of national organizations, including the Atomic Energy Commission's Oak Ridge Institute of Nuclear Studies, the American Chemical Society, the National Science Foundation, the American Association for the Advancement of Science, the National Science Teachers Association, the Westinghouse Educational Foundation, the U. S. Science Service and the U. S. Chamber of Commerce.

Excellent science television programs are available for nearly all grade levels: one notable example is the Harvey White physics course, made on a grant from the Fund for the Advancement of Education. Columbia, Illinois, Yale and other universities are developing important new science and mathematics courses, primarily for secondary schools.

Teacher training

A model for the training of science teachers is the group of institutes conducted by the National Science Foundation, both during the summer months and during the academic year. These institutes are for secondary school teachers only, and admission to them is highly competitive.

A number of colleges and graduate schools of education are considering setting up similar institutes, often with special attention to the elementary school teacher. They are also giving thoughtful attention to the need for courses and workshops, both on campus and by extension, for science teachers on all grade levels. The courses would inform teachers of the latest advances in the sciences and the most effective new ways to teach them.

In the workshops, as the Illinois committee envisions them, teachers "would work on their own professional problems and would analyze common teaching and curriculum problems together. Scientists and professional educators would serve as resource personnel." Several large corporations already offer summer workshops for science teachers, (*see above*).

Both universities and industry are generally responsive to specific needs. The University of Illinois, for example, has planned a program for training elementary school science consultants. It also helps locate summer work in marine laboratories for biology teachers from inland states, who might otherwise be forced to teach marine life without ever having seen the ocean.

Facilities

The best general source of up-to-date information on equipment, apparatus and supplies is the Scientific Apparatus Makers Association, 20 North Wacker St., Chicago 6.

Information on printed instructional materials is available from the American Textbook Publishers Institute, 432 Fourth Ave., New York City 16.

A useful guide to *Free and Inexpensive Learning Materials* is published by the Division of Surveys and Field Services, George Peabody College for Teachers, Nashville, Tenn.

And in general

Among your schools' best resources for general guidance in developing science programs are your state department of education (especially for questions regarding Federal aid funds) and the National Education Association, 1201 16th St. NW, Washington 6, D. C

Two national organizations—the American Association for the Advancement of Science, and the National Academy of Science—have received Carnegie grants for concentrated work to improve the teaching of science in the schools. **End**

A quick quiz

Rate the science programs in your own schools

Answer every question. Then see page 82, to learn how your schools rate.

Curriculum

	Yes	No	Don't know
Is science instruction available to every student in every grade from kindergarten through grade 12?			
Is mathematics instruction available to every student in every grade from kindergarten through grade 12?			
Is at least one unit devoted specifically to science in every elementary grade?			
Is every student required to take two full years of science in grades nine-12?			
Is every student required to take two full years of mathematics in grades nine-12?			
Are science-gifted students required to take at least three years of both science and mathematics in grades nine-12?			
Is every science class enrollment kept under 30 pupils?			
Does every science course in grades nine-12 require individual laboratory experimentation by each student throughout the school-year?			
Are full-credit seminars for independent research available for gifted students in grades 10-12?			

Course effectiveness

Are enrollments in elective science courses well above the low national average (biology 73%, chemistry 32%, physics 23%)?			
Do students score well above the low national averages on standard achievement tests?			
Do students enter science fairs, science essay contests and other extracurricular science events?			
Do graduates who enter college find themselves motivated to take science courses and prepared to cope with college-level science?			
Do terminal students find their science education respected by potential employers?			

Staff

Elementary

Has every classroom teacher passed at least 20 college semester hours of science?			
Do all teachers participate in regular workshops in the teaching of science?			
Is a qualified full-time science consultant available to all elementary schools?			

Secondary

Is every teacher of a science course qualified with a college major in his subject?			
Has every science teacher passed at least 50-60 college semester hours in science and mathematics?			
Do all science teachers belong to professional organizations?			
Do all science teachers continue their scientific studies during summer months—at a university, on a job or by private study?			
Do science departments subscribe to—and do teachers read—recognized professional journals?			

continued on page 82

	Yes	No	Don't know
Counselors			
Does the guidance staff include at least one science-trained counselor to advise students on choice of high school courses, college and/or career?			

Salaries

Does a qualified secondary school science teacher start at between $5,000 and $6,000 a year?			
Are salary ceilings flexible enough to compete with industry trends?			
Are salary increments geared to advanced scientific study, as well as to professional training?			
Are undergraduate courses accepted in lieu of a master's degree for advance to higher schedules?			
Administration			
Does the school budget provide realistically for science apparatus, supplies and instructional materials?			
Are science teachers protected from class overloads and extracurricular distractions?			
Are science teachers allowed time off with pay to attend recognized science conferences?			
Are teachers on all grade levels encouraged to experiment with new content and new techniques of teaching science?			
Facilities			
Does every elementary school classroom have a year-round science corner or science table?			
Does every secondary school have combination classroom-and-laboratory science rooms, with individual laboratory facilities for each student?			
Does every science room include a teacher's office and conference area, and adequate storage facilities?			
Does every student on every grade level have access to professional scientific apparatus?			
Is the elementary school budget for science in fair proportion to that for art and other disciplines?			
Does the science budget for secondary schools insure laboratory supplies for each student in every course throughout the year?			
Does every science teacher have access to projectors and other audio-visual aids?			
Is every science textbook now in use less than ten years old?			
Does every school library, at every grade level, own authoritative (not popular) science reference books and magazines?			

Resources

Has the administration applied for Federal aid under the National Defense Education Act?			
Are scientists and professors of education from nearby colleges and universities acting as consultants to the schools' science programs?			
Are scientists in the community participating in the schools' science programs?			
Have the resources of local industry been tapped for the schools' science programs?			
Have national organizations been approached for guidance and information regarding the goals and means of science education?			

Your rating

There is no numerical rating.

Every **Yes** *answer means that your schools have achieved at least a bare minimum of adequacy in that phase of your science program. These phases require* continuing attention.

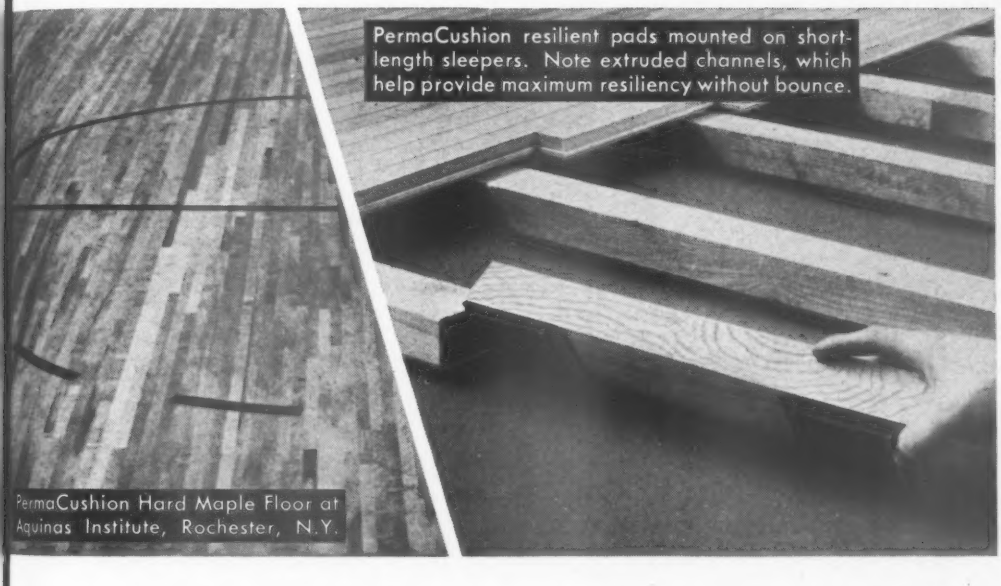
Every **No** *answer means that your schools have failed to achieve a minimum of adequacy in that phase of your science program. These phases require* prompt correction.

An answer of **Don't Know** *is the most serious danger signal. It flags administrative indifference to a key phase of your schools' science program. These phases require* **immediate investigation.**

permaCushion*

FREE FLOATING FLOORS

the architect's answer to school boards



PermaCushion resilient pads mounted on short-length sleepers. Note extruded channels, which help provide maximum resiliency without bounce.

PermaCushion Hard Maple Floor at Aquinas Institute, Rochester, N.Y.

for uniform resiliency, dimensional stability, initial and lasting economy

Today's school boards are more than ever alert to long-range values. They are demanding the *practical best* in design and construction of modern school plants . . . and they are asking informed questions.

When you recommend the PermaCushion rock maple floor system, you are answering in the affirmative such queries as, "Will our new gym floor last the life of the building?" "Will it stay resilient . . . keep its surface smoothness?"

The answers are an emphatic YES because the PermaCushion floor system is designed for long life and permanent smoothness. Resilient, slotted pads are firmly attached to short-length, non-warping floating sleepers, designed to *move with the floor.* The internal stresses which cause buckling and cupping in conventional floors are eliminated. When the floor is in use, bellows-like action of the PermaCushion pads induce constant under-floor air circulation too. PermaCushion's Northern hard maple flooring is extra thick; provides 100% more wearing surface above the tongue. Installation by the powernailing method assures perfect holding power. Sleepers are Dri-Vac treated with Woodlife to avoid decay, fungus and termite damage. Flooring may be similarly treated for added protection.

For your next gymnasium or auditorium, specify PermaCushion. Your clients will not only welcome its moderate cost and ultimate economy, but will be pleased with your choice for years to come. For details, write Robbins Flooring Co., Reed City, Mich., attn: Dept. SM-559

* Patented and Registered in U.S. and Canad

ROBBINS FLOORING COMPANY

Reed City and Ishpeming, Mich. Phone — REED CITY TEnnyson 2-4111

Manufacturers of Ironbound* Continuous Strip* Maple Flooring, PermaCushion* Resilient Floors and other hardwood flooring

*T.M. Reg. U.S. Pat. Off.

This
SCAFFOLD

GOES UP
in 90 Seconds

When there's off-the-floor work to be done—it can be done faster, more safely with a Baker Scaffold.

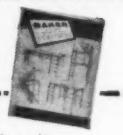
There's no fiddling around with bolts or screws to tighten. 5 simple operations—just 90 seconds worth—puts the light weight Baker Scaffold up, safely locked in position to the right height. Your workman is placed at the most efficient height to do his job because the platform height is adjustable every three inches.

The labor time you'll save will buy several Baker Scaffolds. Check your telephone directory for your local Baker Scaffold distributor—or write direct. Our representative will show you the advantages of Baker Scaffolds in relation to your job.

LISTED UNDER RE-EXAMINATION SERVICE
UNDERWRITERS' LABORATORIES, INC.

BAKER
SCAFFOLDS
DESIGNED FOR PORTABILITY • BUILT FOR DURABILITY

Write for
Baker Scaffold
Bulletin # 591



BAKER-ROOS, INC.
P. O. Box 892, Indianapolis 6, Indiana

Gentlemen: Send the folder described on Baker Scaffolds without obligation. SM

Name_____
Organization_____
Address_____
City_____ State_____

DISTRIBUTORS IN PRINCIPAL CITIES
(Circle number 707 for more information)

Summer reading

continued from page 54

"In summer school everyone has a chance and everyone gets a second chance."

"My mother says I've improved in everything. I'm even a better boy at home."

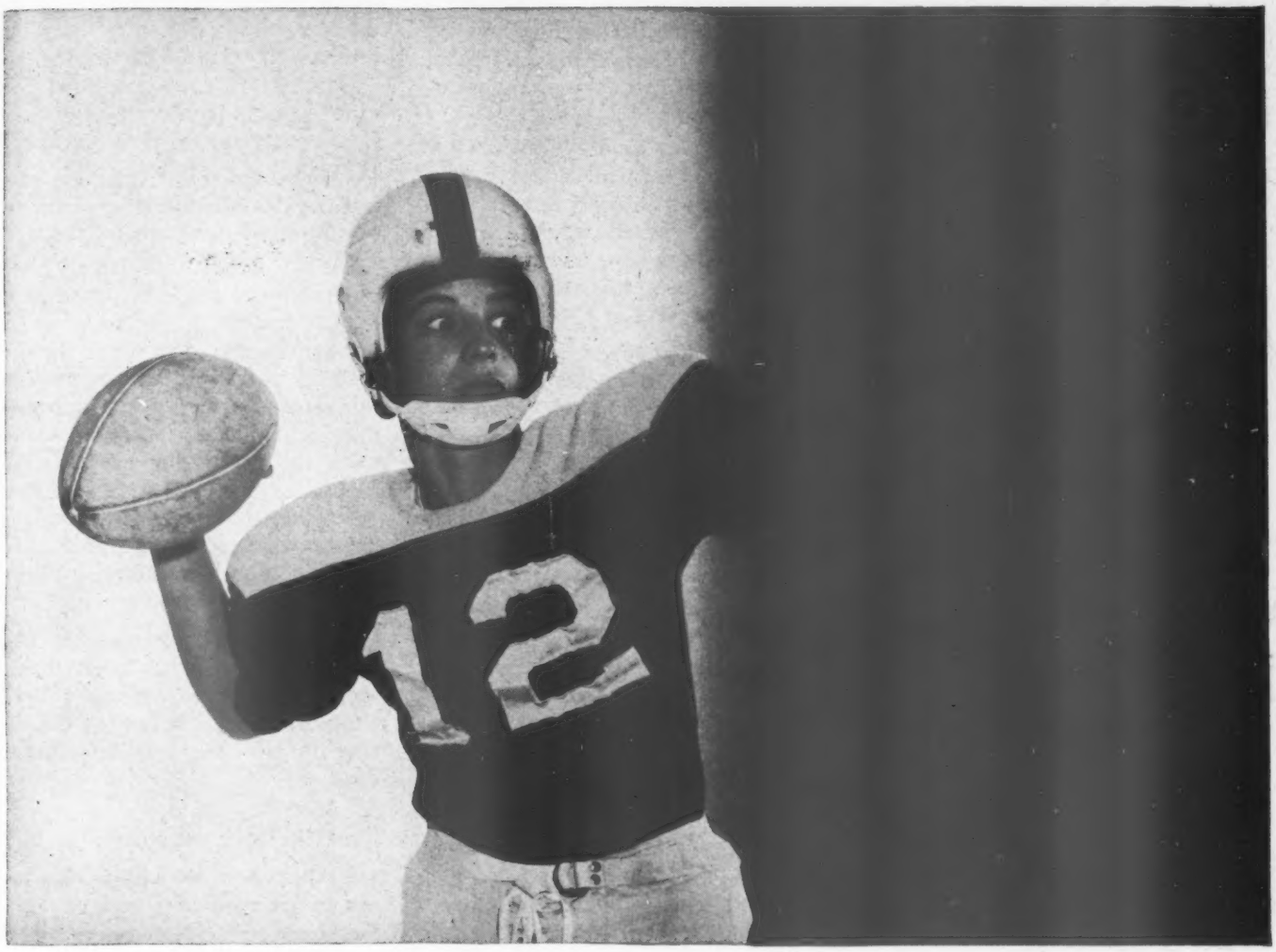
"I like summer school because I can ask questions about things I don't understand."

"This is the first time I could read my grandmother's letters to me. Now I can write her, too. We exchange."

And a parent said: "For the first time in his life, my son has been inspired to read enough to find real enjoyment in it. And for the first time he has experienced the thrill of doing good work, instead of being satisfied with a mediocre job." **End**

DISTRIBUTION OF GAINS OR LOSSES
(At close of 1958 summer school)

	Gain or Loss in Yrs. Mos.	Number of Pupils Boys	Girls	Total
GAIN	2- 9	—	1	1
	2- 8	—	—	—
	2- 7	—	—	—
	2- 6	—	—	—
	2- 5	—	—	—
	2- 4	1	—	1
	2- 3	—	2	2
	2- 2	—	—	—
	2- 1	1	1	2
	2- 0	1	1	2
	1-11	2	—	2
	1-10	2	1	3
	1- 9	—	—	—
	1- 8	3	3	6
	1- 7	6	2	8
	1- 6	6	7	13
	1- 5	11	1	12
	1- 4	7	6	13
	1- 3	13	4	17
	1- 2	19	9	28
	1- 1	24	12	36
	1- 0	37	8	45
	11	29	11	40
	10	30	13	43
	9	47	17	64
	8	34	17	51
	7	48	23	71
	6	63	19	82
	5	53	14	67
	4	44	16	60
	3	41	15	56
	2	40	14	54
	1	29	14	43
	0	**30**	**13**	**43**
LOSS	—1	18	2	20
	—2	14	2	16
	—3	10	2	12
	—4	9	3	12
	—5	3	1	4
	—6	3	—	3
	—7	—	1	1
	—8	1		1
	TOTAL	**679**	**255**	**934**
	% of Gain	87%	91%	88%
	% of No Gain, No Loss	4%	5%	5%
	% of Loss	9%	4%	7%



Who "blacked out" the receiver?

If your high school athletic field was built before 1950, chances are it is inadequately lighted.

And chances are there doesn't seem to be much you can do about it, because the conductors of your lighting system are *loaded to capacity*. Addition of new incandescent fixtures would mean new wiring, new transformers . . . possibly even new poles and new cross-arms — a major, expensive project.

Now, there is an *economical solution* to this problem. With new High Output Wide-Lites, you can modernize your lighting system *without expensive rewiring*. You can *gain up to five times as much illumination*, yet actually reduce the total connected load, utilizing the same conductors.

To bring your lighting system up-to-date, you simply replace existing fixtures with more-efficient High Output Wide-Lites. And only the number of fixtures necessary to achieve the desired increase in illumination need be replaced. Wide-Lite's unique broad pattern blends smoothly with those of adjacent units . . . provides smooth, even coverage without "hot spots" or heavy shadows.

For the first time, High Output Wide-Lites make possible the use of efficient color-corrected mercury vapor lamps for athletic field lighting. These modern lamps have more than seven times the life of incandescents, and produce a soft, glare-free light which more closely resembles actual daylight.

Get complete information on this effective low-cost method for modernizing your athletic field without expensive new construction. Fill in and mail the coupon today.

WIDE-LITE.

Manufactured by

WIDE-LITE CORP.

P. O. BOX 191 • HOUSTON 1, TEXAS

In Canada: Wide-Lite Division of
Wakefield Lighting, Limited London, Canada

WIDE-LITE CORPORATION
P. O. Box 191, Houston 1, Texas

Please send complete information about new **HIGH OUTPUT WIDE-LITES.**

NAME_____

SCHOOL_____

ADDRESS_____

CITY_____ STATE_____

(Circle number 750 for more information)

Principal selection

continued from page 51

candidate get annoyed and say, "I'm not going to go through this sort of thing"?

SALMON: We have never had anybody do that after the first 30 have been selected. We have had some people say that the procedure is too long, and they can get another job anyway, but this is before the detailed screening begins. Remember, applicants know right at the beginning what they are in for. We publish our "terms" when we announce the opening.

Q. Do you think you lose top potential candidates simply because they don't like the idea of such a detailed evaluation?

SALMON: Perhaps we lose a few, but I doubt that it is a serious loss. A good man, or woman, will see in our initial announcement two key things which, we think, will attract him. First of all, he has received the job specifications for a principal in the Covina district. He knows he will be an educational leader in practice as well as in theory. Second, the importance of the job is underlined by the above-average salary we pay for it.

Q. In many parts of the country, elementary principalships are filled by women. Do you have many women applicants?

SALMON: We have had very few women applicants in the last five or six years and, strangely enough, we have never selected one. This is not a matter of policy, however. They just don't seem to be interested. I don't know why.

Q. How about direct recruiting—if you know about a good man in another district, would you make any particular effort to interest him in applying?

SALMON: No, we don't go out to recruit individuals. We depend upon contacts made with individuals by placement bureaus. Frequently, placement officers tell us that they know of an individual who may or may not wish to move, but one they feel might be interested in our proposition. The placement officer then makes the contact.

Q. Isn't it bad for morale not to give our own people more than the slight advantage you described before?

SALMON: This is one of the things we wrestled with. We finally decided it by saying that we want the best principals in our schools and we don't care whether they are from Greenwich, Conn., Covina or San Francisco. We know that good principals are the key to a good instructional program. We want the best.

Q. You said you circulate your openings nationally. Where do most of your candidates come from?

SALMON: From California. There are relatively few who come from outside the state. In fact, most of our applicants come from the Los Angeles metropolitan area. For one thing, our district is better known in that section. Many of the applicants know they would not have to move far. Of course, there are people in other parts of the country who want to get to Southern California because of the climate, so we always get applicants from the East.

Q. Do you pay the expenses of a candidate who must travel to Covina? I think you end up with 12 people actually coming to the district for two sessions on different days.

SALMON: No, we don't. We haven't found it to be necessary.

Q. What about the ability of a person to get away in March or April? Suppose your screening period doesn't coincide with his vacation.

SALMON: This isn't too big a prob-

Administrative Selection Results

Name of Applicant

Date

Compilation of Scores

STEPS	PER CENT	FACTOR	SCORE
Training and experience	_____	x 3.0	_____
ETS examination	_____	x 2.0	_____
		(Sub Total)	_____
Classroom observation	_____	x 2.0	_____
Oral interview	_____	x 3.0	_____
		Total	_____

Total score = 100

Ranking

"We want the best principals in our schools. We know that they are the key to a good program."

NOW...with famous

Honeywell Temperature Controls...

a comprehensive Honeywell

Maintenance Agreement!

If your building is equipped with Honeywell Temperature Controls, you're eligible for this comprehensive maintenance insurance policy.

HERE'S WHAT HONEYWELL MAINTENANCE COVERS!

- Honeywell experts take over entirely the care of your building's temperature controls.
- They periodically examine, adjust, and clean all controls, valves, motors and accessories.
- Any worn or defective controls are replaced or repaired at no additional cost.
- Emergency calls, if needed, are included in your contract.

HERE'S WHAT IT MEANS TO YOU!

You get peak performance from your equipment because full-time specialists watch over it—men with the equipment, tools and knowledge to do a thorough job. Thus you protect the major investment in your heating and cooling equipment.

You get trouble-free performance because these experts can spot minor faults before they become major breakdowns.

You avoid budget-breaking bills because even if there are unexpected repairs, there are no unexpected repair bills. It's all covered by your contract.

HERE'S WHAT IT COSTS!

Honeywell Maintenance Agreements are based on the size and number of controls in your installation. They cover one full year, are renewable every year, and their low cost can be included in your yearly budget.

A Honeywell man from your local office will be glad to tell you the exact cost of a Honeywell Agreement for your installation. No obligation. Call your local Honeywell office today or send in the coupon below.

Honeywell

H HONEYWELL First in Control

MINNEAPOLIS-HONEYWELL
Department SM-5-59
Minneapolis 8, Minnesota

Please send me information on a Honeywell Maintenance Agreement.

Building name_____ Year control system installed____

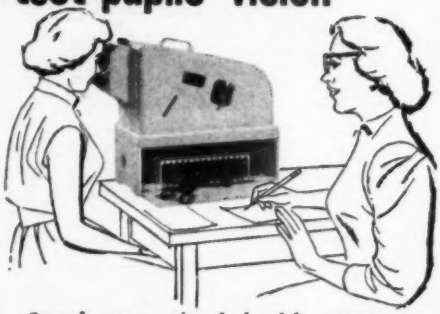
*Your Name*_____

*Address*_____

*City*_____ *Zone*____ *State*_____

(Circle number 726 for more information)

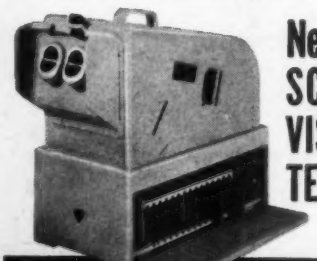
Fastest, surest way to test pupils' vision



Speed your visual health program with fast, reliable measurement. N. Y. School Vision Tester identifies the 1 out of 4 who need visual care.

Compact, portable instrument needs only 2 x 2 ft. of space. Accurate tests, including Mass. Type, administered in about 1 minute—even to pre-schoolers.

Professionally approved. Thousands now in use. 30-day trial. Write for free booklet and movie, "Report Card On Vision:" Bausch & Lomb Optical Co., Dept. V-5, Rochester 2, N. Y.



New York SCHOOL VISION TESTER

BAUSCH & LOMB

SINCE B&L 1853

(Circle number 752 for more information)

lem. I have discussed it with several candidates. Almost all of our candidates are principals at present. Most principals, we have found, have accumulated earned vacations which they will only take during the summer. Thus, they don't have to sacrifice pay to come to Covina for two days. They do have to sacrifice five days of vacation, though.

Q. This would reveal to the present district that they are shopping for a job. Do you find that it is generally known by the present district that they are going to Covina to be interviewed?

SALMON: Yes. One of the first things that we do when a person applies is to indicate that this is no secret operation. We immediately send a sheet to his present district and ask the superintendent to rate the person in precisely the same categories as does the committee. It is all open and above board.

Q. Apparently you finish your screening in early April. How long do you wait to advise the successful candidates?

SALMON: We have found that we have to place our top candidates very quickly because that list just disappears. For that reason we don't give the successful finalists a long time to think it over once we have decided. We say, "You've got it if you want it—and you must let us know in two days." After all, these people have been living with the idea of coming to Covina for two months. They should be able to answer. Let me emphasize that our screening process is not an inquisition. Good candidates don't feel that way about it. In the personal interview I conduct with the finalists, my first question almost invariably is, "Why do you want to come to Covina?" They have almost a standard answer. "This is one of the first times that I have ever seen a procedure which I think establishes *quality*." I think many of these people feel they have the quality and want to prove it to themselves—even if they don't get the job.

Q. Do you ever go back to last year's list before starting your screening process for next year?

SALMON: No, we never do, because the list usually evaporates. But there is more to it than that. We have observed that we consistently attract higher level people each year as our system and our district become better known. I think this argues against using last year's list. By the same token, I think that our method of selection does its best job in picking top people—probably the top five on our list—and when you get below that, we feel that the list becomes less discriminating.

Q. You implied earlier that teachers could apply for these principalships. In general, when you hire a principal, do you prefer a man who has had experience as a principal, or doesn't it matter?

SALMON: Ordinarily the procedure eliminates those who haven't had experience, unless they are from the Covina district. This is a peculiar thing that I cannot explain statistically. The people without actual experience as principals seldom become one of the top 30 in our initial screening, unless they are local peo-

ple. This year we had several local men get to the top 12.

Q. Do you set any age limits for your candidates?

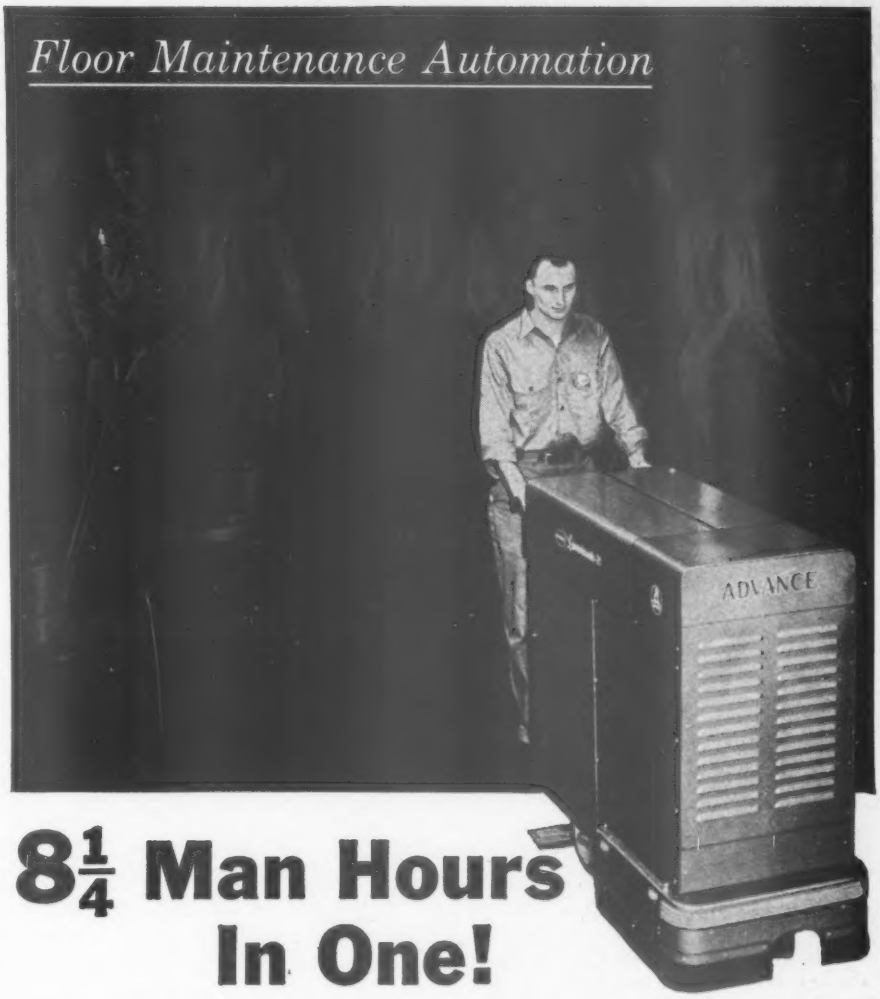
SALMON: No. But in evaluating personal qualifications we have items like appearance, mental alertness and ability to present ideas. Many older people, who are less active, wouldn't stand up well on these points.

Q. A principal, to be a true educational leader, must not be short-circuited by the curriculum supervisors in the district office. How do you get around this?

SALMON: We are truly dedicated to making the principal the educational leader in his building. In accomplishing this, we have redeployed the resources which we would ordinarily expend for central office supervisors and consultants. We think that our selection procedure chooses people who are good supervisors and coordinators of instruction as well as administrators. While we do not have supervisors on our staff who work directly with teachers, we do have many resources available to principals. Our director of curriculum has as her major task the in-service training of principals. In addition, we budget sufficient funds so that we can bring in any number of university or other consultants whom our principals may want to have. It is possible under our procedure for a principal, or a small group of principals, to identify a problem and request a top-rate outside university consultant to come help them with it. They, however, must assume responsibility for implementation and follow-up. If they wish to have the consultant come back to evaluate how well they are putting the idea into effect, they can do this. We feel that this establishes a climate which helps principals develop to their fullest.

In addition to the director of curriculum, we do have the position of staff assistant to the assistant superintendent for educational services. This is a rotating position. In order to occupy it, the person must have three years of experience as a principal in our district. He applies for the position and occupies it for one year. One of his major tasks is to help beginning principals in the interpretation and implementation of district policy. **End**

Floor Maintenance Automation

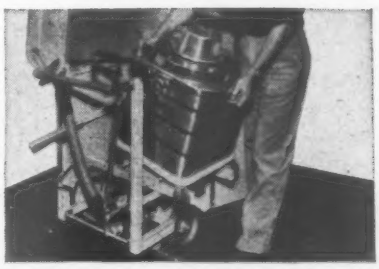


8¼ Man Hours In One!

The new Advance "Convertamatic" scrubs and vacuums 12,500 square feet of floor an hour—over eight times the area one man can clean with 19" floor machine and vac!

Here's a one-man floor cleaning gang that operates at a finger's touch. In one pass it lays solution, scrubs, vacuums and dries. Or, also in one pass, it dry-polishes and vacuums. Goes forward or back—from slowest walk to a near trot. It turns on a dime . . . operates on pennies . . . and saves dollars and dollars of costly labor. Call or write for full details today!

- Gasoline, propane, electric and battery models available.
- Fully variable speeds, forward or reverse.
- Brush pressures can be varied from 0-160 lbs.
- Double-bladed suction squeegee dries floors 50% faster.
- Exclusive "Powerflo" drive—no clutch, no differential.
- Twin brushes cut big 24" swath.
- 12 gal. solution tank.
- Choice of 12 or 16 gal. recovery tank.
- Lease and Finance Plans available.



Electric model features exclusive slide-out portable industrial vac . . . doubles utility of machine.

ADVANCE FLOOR MACHINE CO.
4100 Washington Avenue North
MINNEAPOLIS 12, MINNESOTA
Telephone JAckson 1-3615

ADVANCE

ADVANCE FLOOR MACHINE CO.
4100 Washington Avenue North
Minneapolis 12, Minnesota

Yes, I'd like full details on the Convertamatic. I understand there is no obligation.

Name.....

Address.....

City.....State.....

(Circle number 760 for more information)

Why Royal is standard equipment wherever typing is taught!

Think of it! With many different kinds to choose from, *more than half* the typewriters purchased for teaching are Royal Standards.

One reason is the fact that business prefers this typewriter, too. Your students are apt to meet the Royal Standard on that very first job.

Royal reliability is widely recognized. There's less interruption for service. But when service is needed, Royal has more service points than any other manufacturer.

This great dependability helps explain why Royal Standards invariably command higher prices than all other typewriters in the used-machine market.

Exclusive features!

Magic® Margin continues to be the easiest to set of all margins. And the newest Royal Standards bring you many new exclusives like Twin-Pak®, the quick-changing ribbon that fingers don't touch; and *finger-balanced touch* allowing lighter stroking on the short finger keys.

If you haven't investigated the newest Royal Standard, why not call for a free demonstration and trial. Learn firsthand—at *your* convenience—how this great machine can make teaching and learning easier. Much more rewarding for you, too!

ROYAL®
standard

Product of Royal McBee Corporation,
World's Largest Manufacturer of Typewriters.

THERE ARE MORE ROYAL TYPEWRITERS IN SCHOOL AND OFFICE USE THAN ANY OTHER MAKE.

(Circle number 741 for more information)

Boot training for NEW PRINCIPALS

By JOHN P. O'CONNOR,
Principal, Baldwin, N. Y.

Will you have new administrators in some of your schools next September? If so, you might take a tip from this district and give them an opportunity to do their on-the-spot planning, before school opens.

■ ■ ■ The new principal walked into his school on the first day of the new semester and immediately started to work on an avalanche of really pressing problems. Schedules had to be adjusted, decisions made on medical and other certificates, parents placated.

Before he could dig out, get to know the school's routine and start the long range planning that is necessary for the smooth operation of any school, two weeks had gone by and more valuable time would be lost before a comprehensive program could be launched.

Does the picture look familiar? In one form or another it occurs every year in school districts across the country. But it can be avoided.

Here is what was done in Baldwin, N. Y. last summer to help prepare administrative personnel for new assignments.

Faced with the September prospect of "new" principals in three of Baldwin's nine elementary schools, Superintendent Henry C. Ducker proposed a one-week orientation workshop during August as a means of familiarizing these principals with their schools *in advance* of the fall opening. Two of the workshop participants were principals who had just been named to larger elementary schools in the district. A third, previously a classroom teacher, was to assume the duties of elementary school principal when school opened.

The board of education, informed by the superintendent of the values of such a workshop, authorized that the three attending principals be salaried during the period.

The week of orientation began early on the morning of August 4th with a conference of the superintendent and principals during which the program for the week was outlined and discussed. The superintendent then met individually with each of the principals to review appropriate areas of school operation pertinent to his new position: administration, curriculum, supervision, guidance and public relations. As the superintendent met with one of the principals, the other two exchanged questions and answers regarding faculty assignments, pupil enrollments and appropriate considerations relating to their new administrative positions.

Studying the physical plant

Guided tours of the buildings were scheduled later in the day for the incoming administrators. This orientation served to inform the new principals as to availability and suggested best use of special rooms, library facilities and athletic and audio-visual equipment.

These initial tours of the buildings were also occasions for the administrators to meet the custodial force and to make note of progress in repairs and maintenance to the school plant.

Each principal spent the second day of the orientation workshop at the school he would administer, becoming familiar with the organiza-

Announcement!

The internationally-known MONITOR Language Laboratory* has gone domestic!

- - Local representation –

- - Local technical advice –

- - Local service –

Please write for the name of the manufacturer's representative or distributor in your community

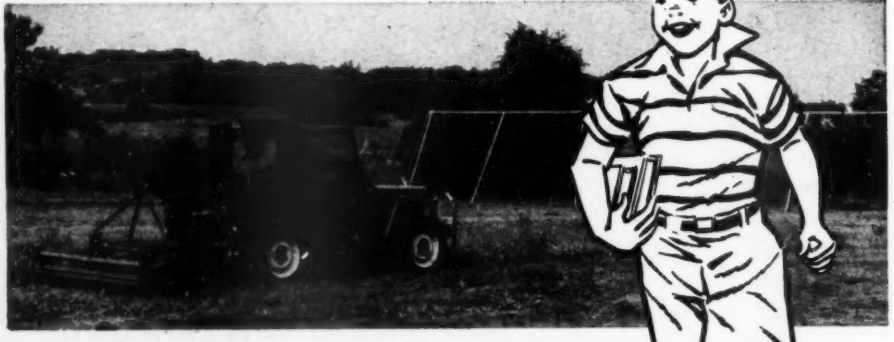
Electronic Teaching Laboratories, Inc.

1818 "M" Street, N.W., Washington 6, D.C.

*PATENTED

(Circle number 759 for more information)

A school--a jeep...and Mott!



The safest--the most versatile mower--

Here is the safest, the most versatile combination for grooming playgrounds ever developed. In MOTT—the downward cutting action of the free-swinging blades and the shape of the hood deflect the shredded clippings to the ground. There's no danger of flying sticks, stones and other debris. It's safe! Safe to use... even when children are present. The flail-type principle of the MOTT Hammer-Knife Mower makes short work out of any mowing job... regardless of vegetation height or ground roughness.

Seeing is believing! One demonstration will convince you! Models to fit most tractors — also available in self-propelled units. See your local dealer . . . but be sure to see MOTT!

mott®

HAMMER KNIFE MOWERS

MOTT CORPORATION

4010 Eberly Ave., Brookfield, Ill.

(Circle number 728 for more information)

tional plans and policies for the coming year. Special teachers' schedules and staff assignments were reviewed. Each man had the opportunity not only to study school correspondence, but also the variety of records and files which otherwise could receive but a minimum of attention during the first busy days of the September term.

Entrance requirements, pupil placement and promotion regulations were carefully checked as well as IQ and achievement test data. Teachers' personnel folders were inspected relative to past observations and certification requirements, particular attention being given to the folders of new teachers.

On Wednesday, August 6th, the principals again reported to their individual schools, to continue their orientation regarding office procedures and meet with their secretarial staffs. In two of the schools involved, the principals interviewed prospective teachers and secretaries for existing staff vacancies.

The budget picture for the coming school year was studied in each school. Purchase requisitions in the various code areas were reviewed and, where appropriate, consideration was given to additional expenditures for supplies and instructional equipment.

The existence of an inter-school phone hookup in the Baldwin district made it convenient and economical during the workshop for the new principals to contact each other or the superintendent for necessary information or advice on any question.

Overall policy examined

Problems and topics of a more involved nature were discussed at a mid-week round up on Wednesday afternoon when the three workshop participants met with the superintendent. At this time specific areas of school policy were clarified and each principal summed up his orientation experiences of the previous days. Each of these summations served as a "check list" for the other participants. Emphasis was placed upon sharing information and ideas which would insure capable school administration and professional leadership in each school from the very first day of resumption of classes in September.

On the following day, each prin-

cipal resumed office work in his own school. By now, even the "newest" of the new principals had begun to feel at home in his own school and was in a position to determine which areas of school operation could most profit from his attention. While one administrator was devoting a portion of the morning to interviewing additional candidates for a teaching position, another principal followed up on overdue shipments of instructional supplies and explained pupil registration procedures to a new secretary. Time being of the essence, an outstanding feature of the principals' summer workshop was the fact that optimum working conditions prevailed throughout each day, since there were no unavoidable interruptions which normally occur on days when school is in session.

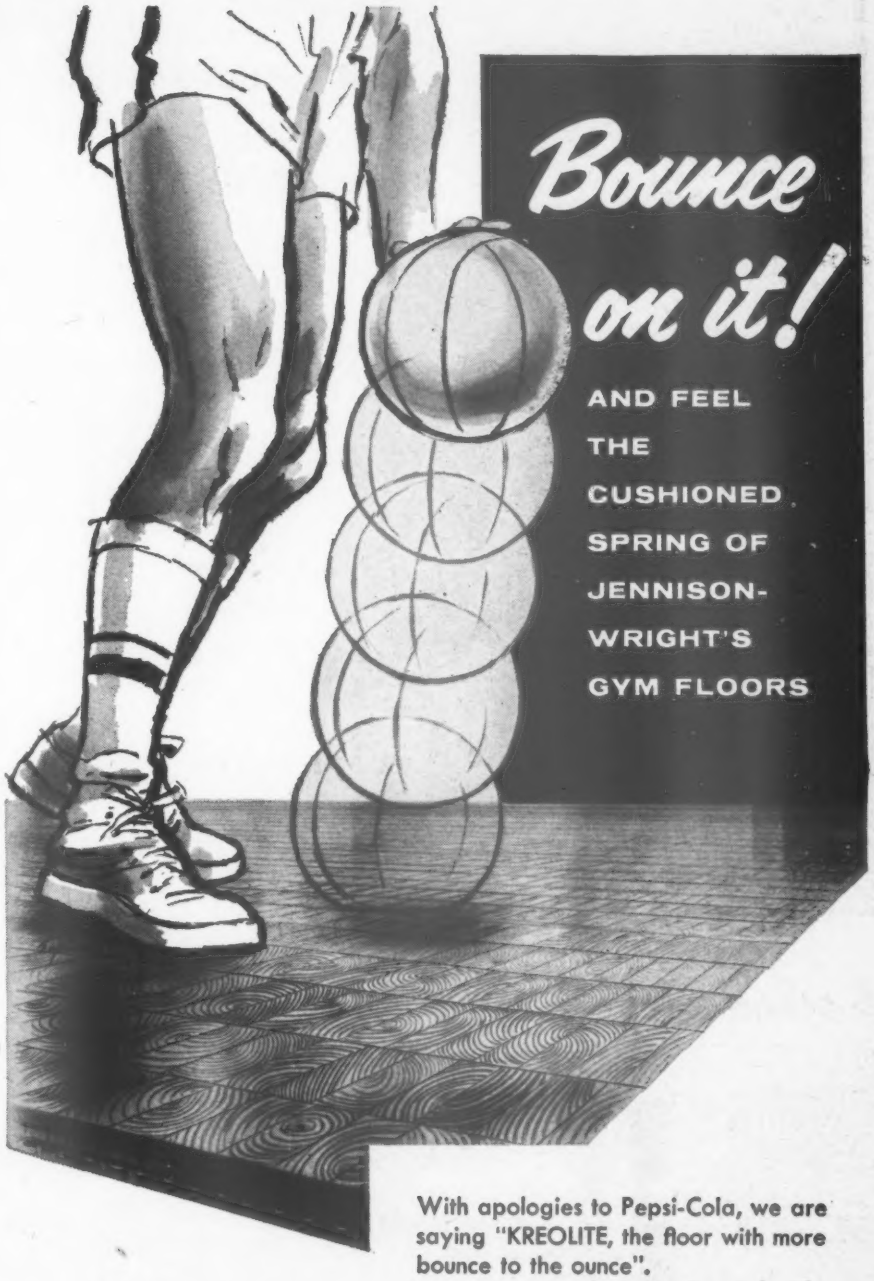
During the afternoon, final preparations were made for the first few days of the September term: back-to-school informational bulletins to teachers and parents, the agenda for the initial faculty meeting, arranging for the distribution of incoming supplies and instructional material and further checks with the custodians on the status of classrooms and facilities throughout the building.

On Friday, August 8th, the last day of the principals' workshop, the superintendent visited each school and conferred with its principal. Personnel, special problems and long range plans were reviewed at these meetings.

As a final and most important consideration, Baldwin's orientation workshop provided for a joint meeting of the administrators with the presidents of the three schools' parent-teacher associations. Here, in a relaxed atmosphere of coffee and cake, cooperative plans for the year's program were discussed.

For Superintendent Ducker and the three elementary school principals involved in the week of orientation the summer workshop closed on a note of confidence; the foundations of a successful school year had been laid.

The smooth operation of the three schools during the past several months attests to the fact that boot training for new principals can pay big dividends in sound administration. **End**



With apologies to Pepsi-Cola, we are saying "KREOLITE, the floor with more bounce to the ounce".

It so aptly describes FLEXIBLE STRIP End Grain Wood Block Flooring with its built-in cushioning resiliency.

Other most wanted features that make it a better gym floor; Durable Beauty, Ease and Economy of installation and maintenance. It's safer too, because it's splinter-proof.

Liked by players and coaches and preferred by budget conscious school officials, these FLEXIBLE STRIP floors will prove to be the most satisfactory you ever specified. Write today for performance and data specifications. Take your first step to better floors for gyms, multi-purpose rooms or shops.

JENNISON WRIGHT

FLEXIBLE STRIP END GRAIN FLOORS

THE JENNISON-WRIGHT CORPORATION

TOLEDO 9, OHIO

(Circle number 758 for more information)

REPUBLIC BOOKSHELF UNITS were installed throughout Freiberger Library, Western Reserve University, Cleveland, Ohio. This building is arranged on an "open stack" principle, with study areas scattered so that students and books will be brought together. The sturdy, steel shelving is adjustable. Send coupon today for more information on Republic Bookshelf Units.

REPUBLIC STORAGE CABINETS provide double-duty, double-door personal storage-wardrobe and supply cabinet facilities. Vertical divider and adjustable shelves for complete flexibility. Ideal for faculty or office. Write for additional information today.

a locker all his own . . .

REPUBLIC STEEL LOCKERS

Winning his place in the locker room is half the fun of making the team. Particularly when he wins the use of a Republic Steel Locker.

Big and roomy with space-saver design . . . fresh and airy, yet strong and protective—Republic Steel Lockers offer school adminstrators over-the-years economies that go with the pride of any school management.

For corridors, classrooms, gymnasiums, auditoriums, laboratories, field houses . . . there's a Republic Steel Locker to meet every school application and budget. Available in a choice of lighter, brighter colors and any of the popular locking devices including the new fully chrome-plated locker handle with built-in padlock strike to protect the beautiful finish. The foolproof handle is attached with a tamper-free Gulmite screw and lockwasher.

Republic Steel Lockers are *Bonderized* for longer service. This exclusive Republic feature provides a superior base for the finish enamel. Protects the locker against rust and corrosion. Restricts damage due to bumps, scratches, and abrasions of everyday service to the site of the injury itself.

If you are designing, building, buying new, or remodeling school facilities, let Republic's Berger Division help you with school locker planning. They will recommend the right locker for the job in either upright or recessed styles and assume full responsibility for complete installation.

Get the best locker buy at the lowest cost—specify Republic Steel Lockers.

CALL YOUR REPUBLIC REPRESENTATIVE, OR WRITE . . .

REPUBLIC STEEL CORPORATION
DEPT. SM-7572
1441 REPUBLIC BUILDING • CLEVELAND 1, OHIO
Please send more information on the following Republic products:
☐ Republic Steel Lockers ☐ Republic Bookshelf Units
☐ Republic Storage Cabinets ☐ Truscon's Supercoat Finish

Name_____ Title_____
Firm_____
Address_____
City_____ Zone____ State_____

REPUBLIC STEEL
World's Widest Range of Standard Steels and Steel Products

TRUSCON VISION-VENT® WINDOW WALLS WITH SENSATIONAL SUPERCOAT FINISH give you the solid strength of steel for curtain wall and windows and save field painting costs, too. Truscon's Supercoat Process is factory applied to eliminate all field painting . . . both at installation and during the years. It is available in standard light gray, or attractive colors. For more information, send for attractive brochure in color. Check Truscon's Supercoat Finish in the coupon above.

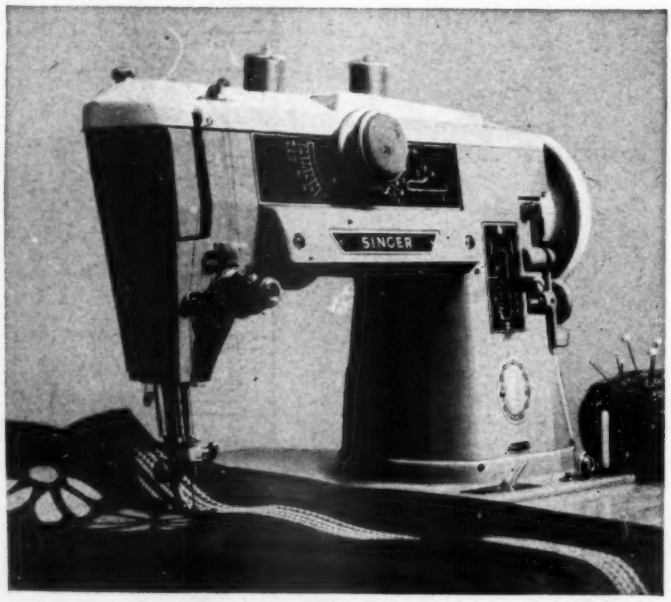
(Circle number 737 for more information)

Now! 3 Slant-Needle Machines by SINGER ...made in America by American craftsmen

Zig-zag and straight-stitch models with interchangeable accessories . . . ideal for classrooms

New SLANT-NEEDLE Deluxe (#404)...finest straight-stitching machine for *every* type of fabric from gossamer-light sheers to bulky coatings. Great variety of easy-to-use attachments for supplementary work.

New SLANT-O-MATIC Special (#403) . . . lets you do straight stitching and a variety of zig-zag and decorative stitches automatically. Comes with a set of "FASHION* Discs" for additional decorative stitches.



Famous SLANT-O-MATIC* (#401) . . . greatest fully automatic machine ever made . . . simplest to operate! To do buttonholes, decorative stitches, sew on buttons, blind-stitch hems without attachments, just "tune" the knob.

Special prices to schools.

The perfect series for classroom use!

Fixed bobbin case • Easy-threading drop-in bobbin • Needles, bobbins, other parts interchangeable • Needle slants toward operator • Gear motor drive for no-stall stitching • Built-in threading chart on each machine • "On call" maintenance service • Simplest, safest for school operation • Choice of space-saving desk cabinets • Rugged construction, SINGER long-life.

1-to-5 ratio

Classroom experience indicates a good ratio of automatic to straight-stitching machines is one to five. Students learn everything that a straight-stitching machine can do and have some experience on the latest automatic zig-zag equipment.

For details write to Singer Sewing Machine Co., Education Department, 149 Broadway, New York 6, N.Y.

SINGER SEWING CENTERS

Listed in your phone book under SINGER SEWING MACHINE CO.

*A Trademark of THE SINGER MANUFACTURING CO.

(Circle number 743 for more information)

Bonds

continued from page 57

dealers and local bankers were also contacted for opinions as to the best possible date for the sale.

The actual printing of the brochure was done by the business office staff on an offset press in the high school. After it was completed, representatives of the board met with Moody's Investors' Service to review the district's rating. As a result of this conference, and based on the material contained in the brochure, Moody's upgraded the school districts obligations from "Ba" to "Baa" thus assuring at least some improvement in the interest rate which would have to be paid on the bonds. Almost simultaneously, Standard and Poor's announced that it had rated the district at "B1+."

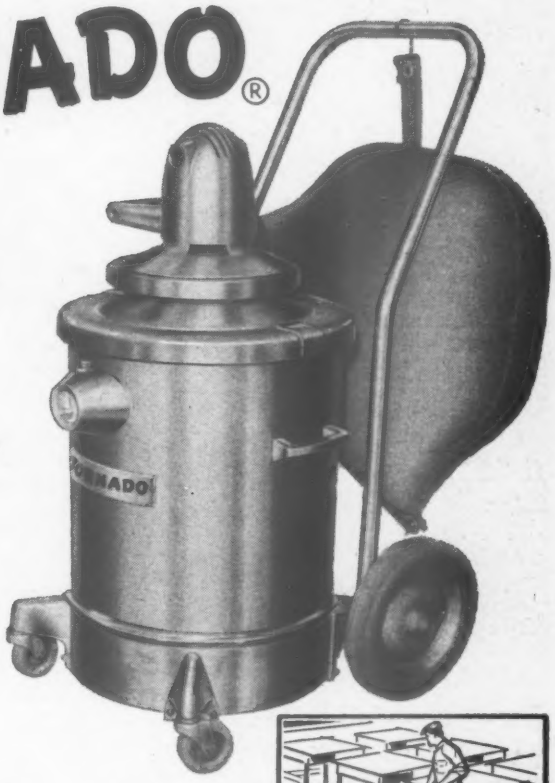
In preparation for the sale, copies of the brochure were sent to every bank in New Jersey and to most bond dealers in Newark and New York. In addition more than 1,000 copies were sent to known purchasers of municipal bonds through a mailing list provided by one of the larger New York bond houses. All banks and bond dealers were advised that additional copies of the brochure were available.

On January 13, 1959, the high school bonds were sold at an interest rate of 3.85%. This meant a saving of more than $126,000 over the 4½% which the district had expected to pay a year earlier. To effect a similar saving at the design stage, the board would have had to eliminate from the school building at least four classrooms, the auditorium or something of equal value.

No one denies the importance of thorough study and sound planning to effect economies at the design stage of a school building. But why save money at one end only to throw it away later? The method we used to improve our credit rating could be followed in any district, and an improved credit rating—plus careful consideration of the proper time to sell your bonds—can save your district considerable money. By improving our credit plans just from "Ba" to "Baa" our district saved enough money to build four extra classrooms. **End**

MORE POWER—MORE USES
FOR SCHOOL CLEANING

TORNADO®
SERIES 400
VACUUM
CLEANER



★ *Tremendous Power*
★ *Wet and Dry Pick-up*
★ *Highly Portable*
★ *Removable Power Unit For Blowing and Light Vacuuming*

School custodians everywhere prefer the Tornado 400 Vacuum Cleaner. Its tremendous, dependable power, durable construction, and portability does every cleaning job faster and more thoroughly.

For wet pickup, Tornado follows the scrubber and sweeps up the suds to leave floor dry and ready for waxing. With the wide range of Tornado attachments, you can clean overhead fixtures, walls or drapes, chalk trays, lockers, halls, and hundreds of hard-to-reach spots.

Put the Tornado 400 to work in your school, now!

Wet pickup of suds, water or any liquid.

Clean halls, lockers, classrooms or auditoriums.

Overhead cleaning is fast and easy with Tornado.

Cleans chalk trays, erasers, all around the classroom.

YOU CAN'T BEAT IT FOR CLEANING BOILER TUBES

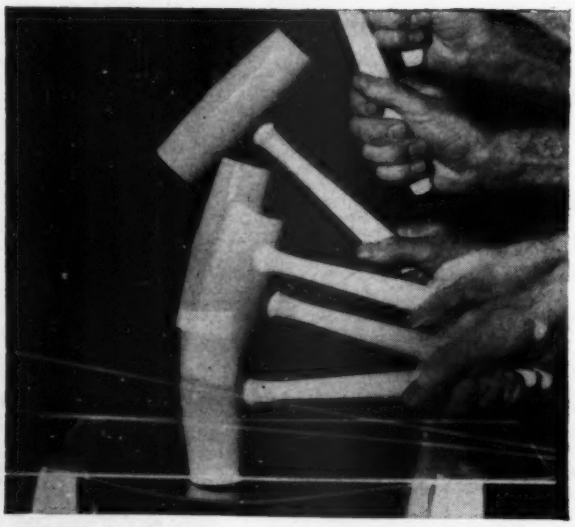
Professional boiler men use this same Tornado vacuum cleaner. Take advantage of this versatility, improve heating and cut fuel costs by cleaning your own boiler tubes regularly.

FREE cleaning survey by a Tornado cleaning engineer at no obligations, just write!

For more information, write for Tornado 400 bulletin #894.

BREUER ELECTRIC MFG. CO.
5102 N. Ravenswood Avenue • Chicago 40, Illinois
(Circle number 709 for more information)

Plexiglas window glazing could have prevented this!



See how PLEXIGLAS "gives" with a blow . . . without breaking!

Increase safety and reduce maintenance costs in your school by installing PLEXIGLAS® acrylic plastic glazing in windows, doors, partitions and skylights. Get the advantages of resistance to breakage and weather, easy installation, crystal-clear transparency or glare-reducing colors. PLEXIGLAS is also a practical and stimulating material for vocational arts projects. Look for the name of your nearest authorized dealer under PLEXIGLAS in the Plastics section of telephone directories in major cities.

In Canada: *Rohm & Haas Co. of Canada, Ltd., West Hill*
Crystal Glass & Plastics, Ltd., Toronto.

Chemicals for Industry

ROHM & HAAS COMPANY

WASHINGTON SQUARE, PHILADELPHIA 5, PA.

CALL YOUR AUTHORIZED PLEXIGLAS DEALER

PROMPT DELIVERY • TECHNICAL ADVICE • FULL RANGE OF SIZES AND COLORS

(Circle number 740 for more information)

PRESS RELEASES

News from the business firms serving your schools

Light-duty school bus

Typical of the trend to smaller units as part of a transportation fleet is the announcement of International's new Travelall. The unit is ideal for han-

dling small groups at noon time or as an "activity bus" in larger schools for teams, bands, etc. Passenger capacity is 12 children or 10 adults. Equipment includes two longitudinal seats, a lowered entrance step, remote door control level for the driver and such standard items as yellow paint, defroster fan, fire extinguisher, first aid kit and assist entrance handle. Two-wheel or four-wheel drive chassis are available. Optional features include automatic transmission, power steering and power brakes.

For more information, please circle number 868 on the Reader Service Card.

■ ■ ■

Automatic cooking kettles

To provide better cooking and faster service at lower cost for volume feeding in schools, the Groen Mfg. Co. is offering a new series of automatic, electric, stainless steel, steam-jacketed cooking kettles. Completely self-contained, these kettles require no steam or water connections, while their special "low-boy" design permits easier cleaning. High-speed action at the touch of a switch sends. even heat around the kettle—side and bottom simultaneously. Known as the new Model EE, the kettles are offered in 20- 40- and 60-gallon capacities, wtih or without a 90° self-locking tilting feature.

For more information please circle number 878 on the Reader Service Card.

■ ■ ■

Battery-powered machine

A recurrent problem when large floor areas are to be maintained, is the long electric cords or cables which must trail the unit. To an extent, this has been solved by gasoline or propane engine power plants, but they have the disadvantage of producing fumes and gases in closed areas.

Advance Floor Machine Co., has now produced a battery-powered model with none of these disadvantages. The unit enables one operator to lay the cleaning solution, scrub the floor, vacuum up the dirty solution and damp-dry the floor all in one operation. The machine can also be used as a dry cleaner—polishing and picking up all dust and loose dirt as it propels itself across the floor.

For more information and prices, please circle number 889 on the Reader Service Card.

■ ■ ■

Portable elementary lab

A portable laboratory designed by a California school administrator, enables elementary and junior high schools to use the same scientific equipment in several classrooms.

Among MobiLab's features are a fixed thermostatically controlled heating unit; built-in water supply; automatic retracting extension cord; electrical outlet; stainless steel basin and hardware. It is made from sturdy birch hardwood and finished with a new wear-resistant paint. Specially-designed sliding storage panels of colorful Marlite Peg-Board, a perforated hardboard with a factory-baked plastic finish, replace conventional drawers and boxes. The MobiLab is 48 inches long, 28 inches wide and 36 inches high. Also available with the basic portable laboratory are a manual of 144 experiments and complete scientific apparatus.

For more information on this product, circle number 897 on the Reader Service Card.

continued on page 102

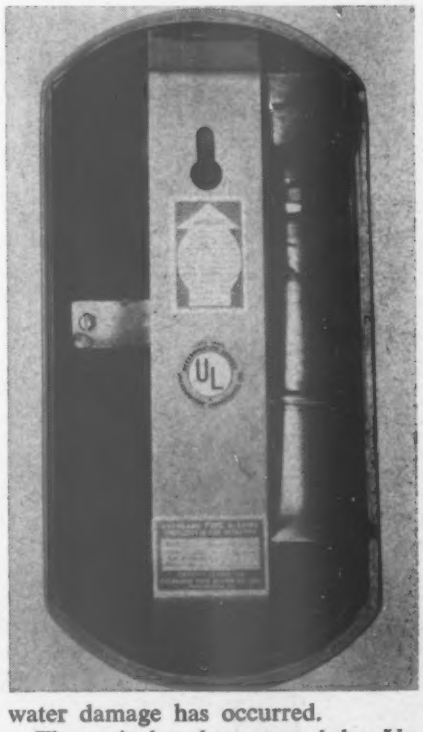
Automatic fire detection

You're looking at the picture of an automatic fire detection unit that costs only $29.95.

This remarkable little self-contained unit is designed to operate a 100-decibel warning horn for 15 minutes when the air temperature surrounding the cover is raised by fire—or other abnormal conditions—to 136 degrees. There is no wiring involved.

Here is how it works: A storage cylinder under the cover contains Freon—a compound developed by General Motors and DuPont. The Freon is kept under pressure. A plug in the storage cylinder fuses at 136 degrees. The Freon escapes into the horn and activates it.

Because the unit is small and self-contained it is easy to install, even in difficult-to-reach areas. It requires no servicing. If the unit is to be used in rooms where the normal temperature is quite high a higher rated fuse such as 158 degrees or 174 degrees can be used. At 136 degrees the alarm will sound a short time ahead of the sprinkler system, thereby making it possible, in some cases, for personnel to extinguish a small fire before any



water damage has occurred.

The unit has been tested by Underwriter's Laboratories, Inc., and carries their seal.

For more details and free literature, please circle number 898 on the Reader Service Card.

When your architect specifies "Acousti-Celotex," he's making sure you get these

ACOUSTI-CELOTEX

If you share the responsibility of assuring your community the best schools possible per building dollar invested . . . you'll insist on ceilings that provide the environment of Quiet that aids teaching and learning. But you can expect more than just Quiet from a wise ceiling choice. It costs no more to get the vital plus benefits that are part of every specification for Acousti-Celotex Sound Conditioning.

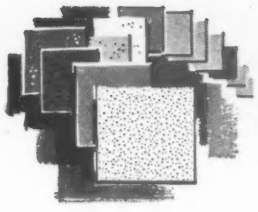
Good today is not enough. Good tomorrow must be assured. For permanent satisfaction, it pays to remember that only Acousti-Celotex can give you all these "Quality Plusses"!

Ceiling Consultation Service

Your Acousti-Celotex Distributor offers valuable consultation, without obligation. Because he is a member of the world's largest acoustical organization, you get the benefits of experience and technical knowledge resulting from installations in all types of educational buildings, in all sections of the country.

For example, he can show you how to combine lighting, ventilation and sound-conditioning in one ceiling system . . . get minimum maintenance and complete re-paintability without sacrificing permanent acoustical efficiency... achieve optimum hearing conditions in classrooms and auditoriums.

Write today for free booklet "Sound Conditioning for Schools and Colleges" and name of your nearest Acousti-Celotex Distributor.

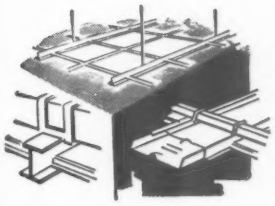


1. PRODUCT LEADERSHIP

More products to choose from, the newest in designs, and manufacturing quality backed by 34 years of job-proved performance.

2. FRANCHISED DISTRIBUTORS

Your Acousti-Celotex Distributor is a member of the world's largest acoustical organization . . . your assurance of engineering skill, dependable service.

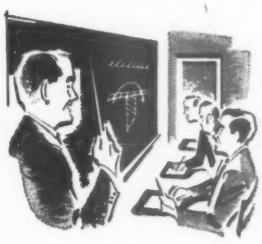


3. INSTALLATION VERSATILITY

With the widest variety of installation methods as well as products, your Acousti-Celotex Distributor can more effectively meet the design needs of every job.

4. SOUND CONDITIONING ANALYSIS

Expert recommendations on materials and installation needed to reduce noise levels; prevent noise spread; improve hearing conditions.



5. TRAINED PERSONNEL

Distributor representatives are thoroughly trained by Celotex engineers . . . continually kept up-to-date on latest developments in acoustics and construction.

6. JOB CRAFTSMANSHIP

"The best crews on the scaffold," proud of their fine reputation, working with the products they know so well . . . Acousti-Celotex materials.

QUALITY "PLUSSES"

7. CEILING ENGINEERING

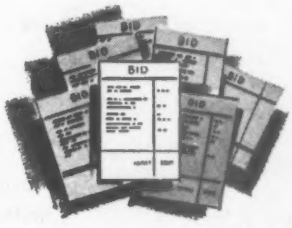
The best in construction planning assistance, from the organization that installs more ceilings of all types than any other in the world.

8. ADVANCE INSPECTION

Pre-checking of all job conditions insures proper permanent installation and guards against future troubles.

9. JOB SUPERVISION

Progress of every job repeatedly checked by your distributor's experienced job supervisors — insuring that high Acousti-Celotex standards are maintained.



10. COMPETITIVE PRICES

You get all these quality plusses without paying more . . . greater value in products, engineering skill and job dependability, without extra cost!

ACOUSTI-CELOTEX SOUND CONDITIONING

TRADE MARK REGISTERED U. S. PAT. OFF.

Products to meet every problem . . . every building code

The Celotex Corporation, 120 S. La Salle Street, Chicago 3, Illinois • In Canada: Dominion Sound Equipments, Ltd., Montreal, Quebec

(Circle number 763 for more information)

Portable voice system

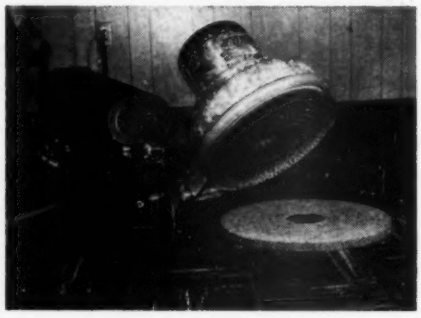
A new transistor-powered portable voice system has recently been developed by Audio Equipment Co., Inc. According to the manufacturer, this portable unit sells for one-quarter of the cost of the smallest conventional, permanent public address installation. It weighs only 16 pounds and its amplifier and batteries are in a watertight case.

The system is particularly useful at track meets and for educational trips.

For more information, please circle number 902 on the Reader Service Card.

Cut maintenance costs

A completely new type of scrubbing and buffing pad which promises to cut floor maintenance costs sharply



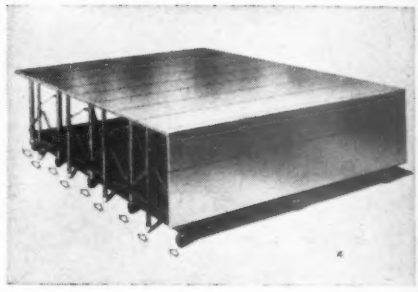
was introduced recently by Behr-Manning Co. The asserted advantages of the new pads include a phenomenal ability to clean heavy build-ups of wax and to remove scuff marks which hitherto have required hand cleaning. They have a durability greater than that of any existing scrubbing material and can make a significant saving in labor costs. The pads work equally well on both sides and are made in diameters ranging in one inch increments from 12 inches upward to fit all popular machines.

For more information, circle number 900 on the Reader Service Card.

■ ■ ■

Portable folding stage

A new stage, designed for easy folding and unfolding has recently been announced by Schieber Mfg. Co. The understructure has a floor support at every joint, assuring complete stability when in use. Equipped with large rubber casters for easy roll-



ing, it also has a locking device which holds it firmly in place when in use. It occupies a minimum of space when folded against a wall or in a storage area. Folding steps are also available with the stage.

For more information and free literature, circle number 899 on the Reader Service Card.

■ ■ ■

Basketball practice device

An ingenious new piece of equipment designed to develop a basketball player's ability in jumping and grabbing rebounds, to improve his timing and coordination and to strengthen his arms, has been announced by Haldemann-Homme Mfg. Co.

Already in use, it is said by basketball coaches to increase a player's jump by two to three inches after training. In essence, "Jump Ball" is a basketball like sphere suspended overhead from a special response arm. The height of the ball is easily adjusted for any size player. The coach sets the height of the ball just within the jumping reach of the player. A special hydraulic-spring mechanism gives enough resistance so that the player

DESIGN for expansion

Top, base and fifteen drawer unit. Capacity—approx. 18,000 cards.

Sliding Shelf and fifteen drawer unit added to basic unit. Capacity—approx. 36,000 cards.

Sliding Shelf and five drawer unit added. Capacity approx. 24,000 cards.

Beautifully designed in clean, modern lines . . . to compliment any library decor. Created for expansion with economy . . . styled for harmony and simplicity.

Your choice of four attractive finishes: light or dark quarter-sawed oak; light or dark maple. Drawers are equipped with combination ring pull and label holder and easy to use self locking rods. Hardware on drawer front is of solid bronze, satin finish.

- IMMEDIATE DELIVERY
- TRANSPORTATION CHARGES PAID

Prompt shipment. See new catalog for prices and complete information.

GB library supplies **Gaylord Bros., Inc.**
SYRACUSE, N.Y. STOCKTON, CALIF.
"the house of prompt, friendly, personal service"

(Circle number 714 for more information)

must grab the ball with both hands in order to bring it down.

For more information, circle number 890 on the Reader Service Card.

■ ■ ■

New furniture manufacturer

A company born as a distributor sales representative for school equipment companies has now entered the manufacturing field with a full line of

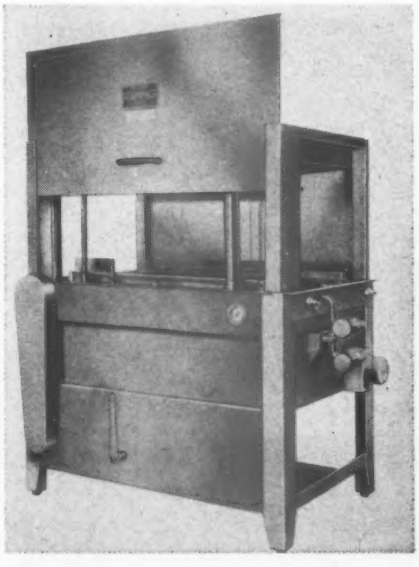
steel tubular classroom furniture. Produced by Twombley Associates, the line includes 10 different units in a series called Ivy League School Furniture.

For more information on these products, circle number 870 on the Reader Service Card.

■ ■ ■

Conveyor dishwasher

A new concept in conveyor dishwashers has been announced by Toledo Scale Corp. The machine has a full-width door (*see picture*) that is counterbalanced to open or close with the fingers' touch and to stay open in any desired position to give the operator a clear view and easy access to the full length of the dishwasher interior. According to the manufacturer, this feature is an important step forward in ease of operation in cleaning.



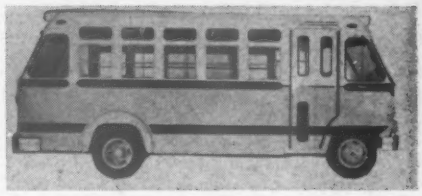
The dishwasher will handle 203 racks per hour, about 5,075 dishes.

For more information, circle number 894 on the Reader Service Card.

■ ■ ■

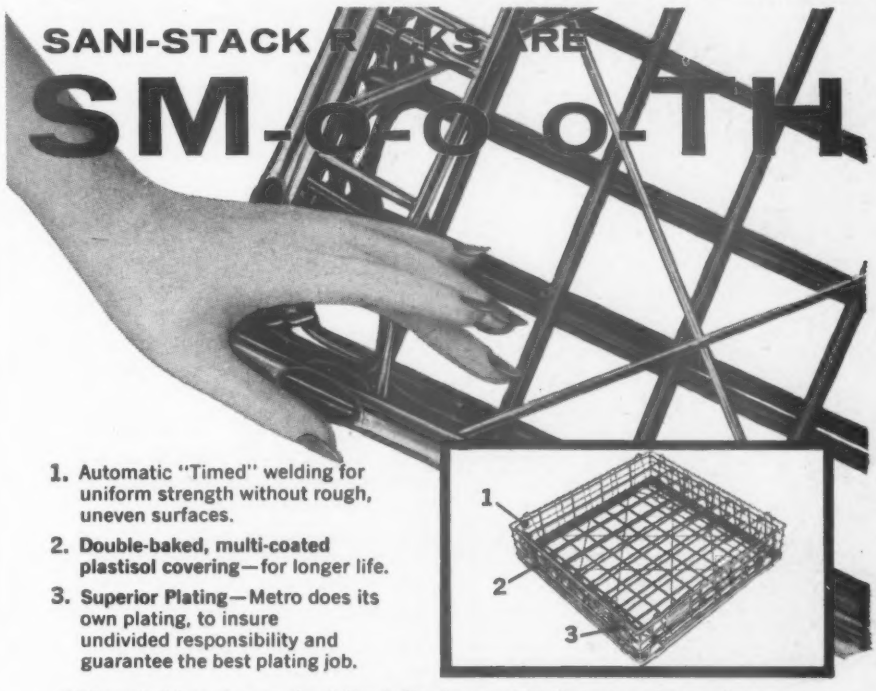
Bantam transit bus

New concept in small-group transportation—a bantam transit bus designed to seat 12 to 25 passengers—has been introduced by Divco-Wayne Corp. Shorter than other transits, far lower than the other high-headroom



buses for greatest stability, and about a foot less in width, the new Coachline Transit is said to be highly maneuverable.

For more information, please circle number 896 on the Reader Service Card.



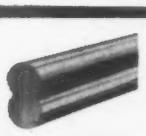
1. Automatic "Timed" welding for uniform strength without rough, uneven surfaces.
2. Double-baked, multi-coated plastisol covering—for longer life.
3. Superior Plating—Metro does its own plating, to insure undivided responsibility and guarantee the best plating job.

Although Metro's new Sani-Stack Racks are 2½ times tougher and stronger than any on the market, they're smooth as silk. Sani-Stack Racks are so smoothly finished that they won't scratch expensive table and counter tops. Metro hammers every corner for smoothness. Advanced "sled-runner" base design glides Sani-Stack over any surface. And, flush, butt welded joints complete the "no scratch" picture!

Costlier Construction? You Bet! *Competitively Priced?* And How!
Delivery? Immediate!

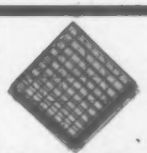
Your Metro dealer will be pleased to point out Sani-Stack's many exclusive features. Call him now! Only then will you really know how much more you get for your money when you specify "Sani-Stack".

A FEW OF THE MANY SANI-STACK FEATURES

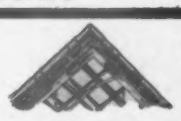


2 in 1 straight eight steel frame—gives 2½ times more strength than ordinary racks.

Exclusive side bracing—strengthens sides, prevents distortion even under roughest service.



Diagonal bracing—prevents twisting out of shape.



No scratch base—Metro 'bows' the rolled angle base, then butt-welds every joint. Corners are hammered to complete the 3 way "no scratch" picture.

Sani-Stack
quality products of
METROPOLITAN WIRE GOODS CORP.
N. Washington St. & George Ave., Wilkes-Barre, Pa.

Be sure to see Metropolitan Wire Goods Products at the National Restaurant Show, Chicago, Booth A-20

(Circle number 724 for more information)

a

New

SCIENTIFIC AID IN TEACHING THE PRINCIPLE OF SOLAR ENERGY . . .

THE STRONG SOLAR FURNACE

Under favorable atmospheric conditions, samples placed in the furnace can be subjected to temperatures in the vicinity of 2,000 degrees Fahrenheit.

Makes possible the utilization of the sun's energy in reaching the melting points of many basic elements.

Consists of a 14-inch parabolic mirror, a means of pivoting and tilting so that it is perpendicular to the sun's rays, a coarse and fine focusing device, and a sample holder, all mounted on a metal base.

$69.50 F. O. B. TOLEDO

Literature on request

Strong — A GENERAL PRECISION COMPANY

THE STRONG ELECTRIC CORPORATION

250 CITY PARK AVE. • TOLEDO 1, OHIO

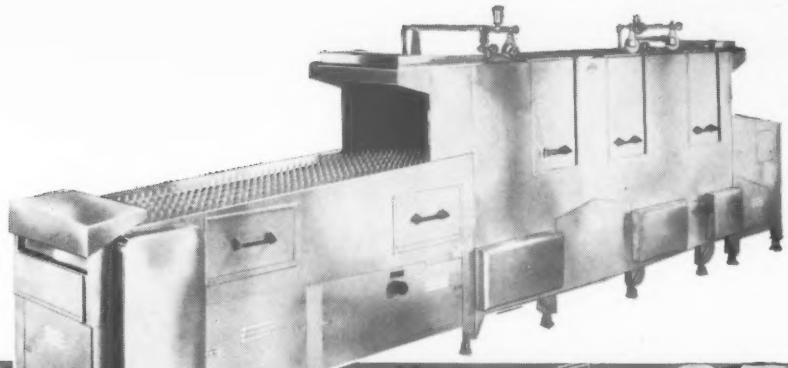
A SUBSIDIARY OF GENERAL PRECISION EQUIPMENT CORPORATION

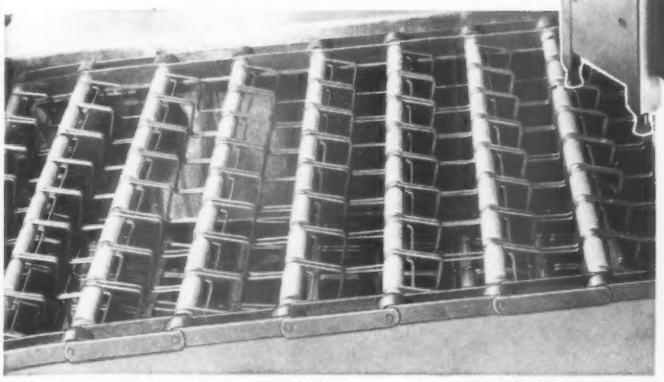
(Circle number 757 for more information)

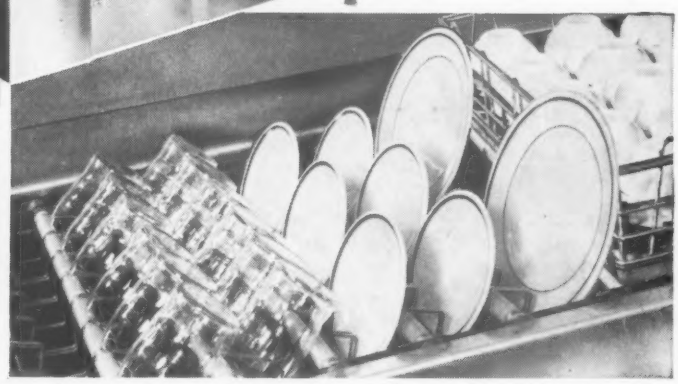
ADVERTISERS

KEY		PAGE
761	Acme Visible Records, Inc. ..... *Agency: E. H. Brown Adv.*	5
760	Advance Floor Machine Co. ..... *Agency: Pidgeon Savage Lewis, Inc.*	89
700	Aetna Life Affilated Co.'s ..... *Agency: William B. Remington, Inc.*	16
765	Airkem, Inc. ..... *Agency: Kastor, Farrell, Chesley & Clifford, Inc.*	73
701	All-Steel Equipment Inc. .... *Agency: Marsteller, Rickard, Gebhardt and Reed, Inc.*	Cover II
702	Aluminum Co. of America .. *Agency: Fuller & Smith & Ross, Inc.*	Cover IV
703	American Bitumuls & Asphalt Co. . *Agency: John O'Rourke Adv.*	22
753	American Playground Device Co. . *Agency: W. T. McVeigh Co.*	14
705	American Seating Co. ..... *Agency: Brooke, Smith, French & Dorrance, Inc.*	37-40
706	Armco Drainage & Metal Products Inc. ..... *Agency: N. W. Ayer & Son, Inc.*	2
707	Baker-Roos, Inc. ..... *Agency: Drennan W. Hart and Co.*	84
752	Bausch & Lomb Optical Co. .... *Agency: Wolff Assoc., Inc.*	88
708	G. S. Blakeslee & Co. .... *Agency: The Biddle Co.*	Cover III
754	Bradley Washfountain ..... *Agency: Kirkgasser-Drew Adv.*	4
709	Breuer Electric Mfg. Co. ..... *Agency: Grimm & Craigle*	97
710	Charles Bruning Co., Inc. ..... *Agency: H. W. Kastor & Sons Adv.*	69
756	Brunswick-Balke-Collender Co. *Agency: Garfield-Linn and Co.*	17-20/30-31
711	Burroughs Corp. ..... *Agency: Campbell-Ewald Co.*	28
763	The Celotex Corp. ..... *Agency: MacFarland, Aveyard & Co.*	100-101
712	Dixie Cup Div., American Can Co. . *Agency: Hicks & Griest, Inc.*	8-9
713	The C. B. Dolge Co. ..... *Agency: E. W. Moore Adv., Inc.*	63
759	Electronic Teaching Laboratories ..	92
714	Gaylord Bros., Inc. ..... *Agency: Barlow Adv., Inc.*	102
716	Haws Drinking Faucet Co. ..... *Agency: Pacific Adv. Staff*	32
717	J. I. Holcomb Mfg., Co. ..... *Agency: L. T. Sogard & Co.*	14-15
718	Howe Folding Furniture, Inc. ..... *Agency: Lawrence Peskin, Inc.*	67
719	Huntington Laboratories, Inc. .... *Agency: Bonsib, Inc.*	66
720	Hussey Mfg. Co., Inc. ..... *Agency: Ray Mills Adv., Inc.*	10
	International Business Machines, Inc. *Agency: Benton & Bowles, Inc.*	
—	Data Processing	74
—	Electric Typewriter	24-25
758	The Jennison-Wright Corp. ..... *Agency: Phillips-Thackeray Adv.*	93
721	Kawneer Co. ..... *Agency: Fuller & Smith & Ross, Inc.*	33
755	Klenzade Products, Inc. ..... *Agency: W. H. Badke Adv.*	63
722	The Korwin Co. ..... *Agency: Ted Levy, Richard Lane & Co.*	63
723	Master Lock Co. ..... *Agency: Scott, Inc., Adv.*	14
724	Metropolitan Wire Goods Corp. .. *Agency: Bauer Adv.*	103
	Minneapolis Honeywell Regulator Co. *Agency: Foote, Cone & Belding*	
725	Fire Alarm System	6
726	Periodic Maintenance	87
727	Mississippi Glass Co. ..... *Agency: Ralph Smith Adv.*	11
728	Mott Corp. ..... *Agency: Culea Adv.*	92
729	M & P Building Sales Co. ..... *Agency: Ben Woodhead, Adv.*	63
730	National Lumber Mfrs. Assoc. .... *Agency: Van Sant Dugdale and Co., Inc.*	12
731	John J. Nesbitt, Inc. ..... *Agency: The Aitkin-Kynett Co., Inc.*	34-35
733	Philco Corp. ..... *Agency: Maxwell Assoc.*	23
764	Plastic Products, Inc. ..... *Agency: Eastern Adv., Inc.*	41
	Radio Corporation of America *Agency: Al Paul Lefton Co., Inc.*	
734	Audio-Visual	71
735	Sound	64
736	Rauland Borg Corp. ..... *Agency: George Brodsky Adv., Inc.*	13
737	Republic Steel Corp. ..... *Agency: Meldrum & Fewsmith, Inc.*	94-95
738	Robbins Flooring Co. ..... *Agency: Schmidt and Sefton Adv.*	83
739	Rockwell Mfg. Co. ..... *Agency: Marsteller, Rickard, Gebhardt and Reed, Inc.*	62
740	Rohm & Haas Co. ..... *Agency: Arndt, Preston, Chapin, Lamb & Keen, Inc.*	98
741	Royal Typewriter Co. ..... *Agency: Young & Rubicam, Inc.*	90
742	Simoniz Co. ..... *Agency: The Buchen Co.*	61
743	Singer Sewing Machine Co. ..... *Agency: Young & Rubicam, Inc.*	96
745	Stromberg-Carlson ..... *Agency: The Rumrill Co., Inc.*	58
757	The Strong Electric Corp. ..... *Agency: Wendt Adv.*	104
746	The Titusville Iron Works Co. .... *Agency: Dowling Industrial Adv., Inc.*	1
747	Underwood Corp. ..... *Agency: William Esty Co., Inc.*	27
748	United Air Lines ..... *Agency: N. W. Ayer & Son, Inc.*	36
749	Up-Right Scaffolds ..... *Agency: Norton M. Jacobs Adv.*	68
751	Divco Wayne Corp. ..... *Agency: Ruben Adv.*	7
750	Wide-Lite Corp. ..... *Agency: Ritchie Adv.*	85

Another FIRST!



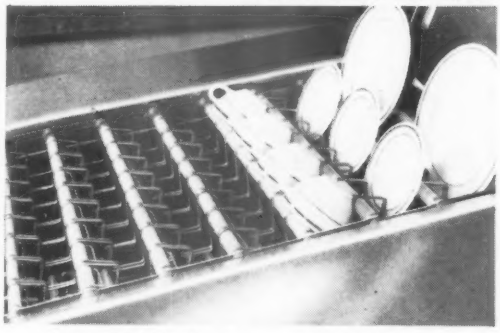




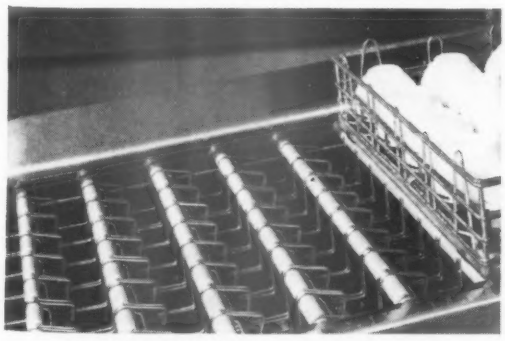
The New Dual-Purpose UNDERSLUNG Stainless Conveyor* Exclusive in

BLAKESLEE PT SERIES DISHWASHERS

Available at Same Price As Peg-Type or Flat Conveyors



NOTE POSITION of cups, plates, and trays for thorough washing, rinsing and draining.



NO PROJECTIONS above conveyor to be damaged by rack loading or unloading.

- **Combines the advantages of Peg-Type and Flat-Belt conveyors.**
- **Handles dishes and trays individually, as well as loaded glass racks and silver baskets.**
- **Virtually indestructible.**

Here's the versatility you've been looking for! With this new conveyor, you can place dishes, trays and bowls directly in the conveyor linkage . . . load glass racks and silver baskets directly on it . . . or use a combination of both!

New-formula nylon spacers on stainless steel cross rods cushion trays and dishes. Design offers minimum obstruction to lower wash and rinse sprays. Arrangement of conveyor links combines strength with minimum dish contact. There is no pull or strain to bend links out of shape. The weight is carried by stainless steel cross rods mounted in Ni-resist rollers.

Exclusive with BLAKESLEE, the new UNDERSLUNG stainless conveyor has no projections above the cross rods . . . conveyor *cannot* be damaged by loading or unloading of loaded racks.

This new exclusive conveyor is available as an optional feature at the same price as the famous Blakeslee Peg-Type and Flat-Belt nylon conveyors in any of the four PT Series Dishwashers.

* PATENT APPLIED FOR

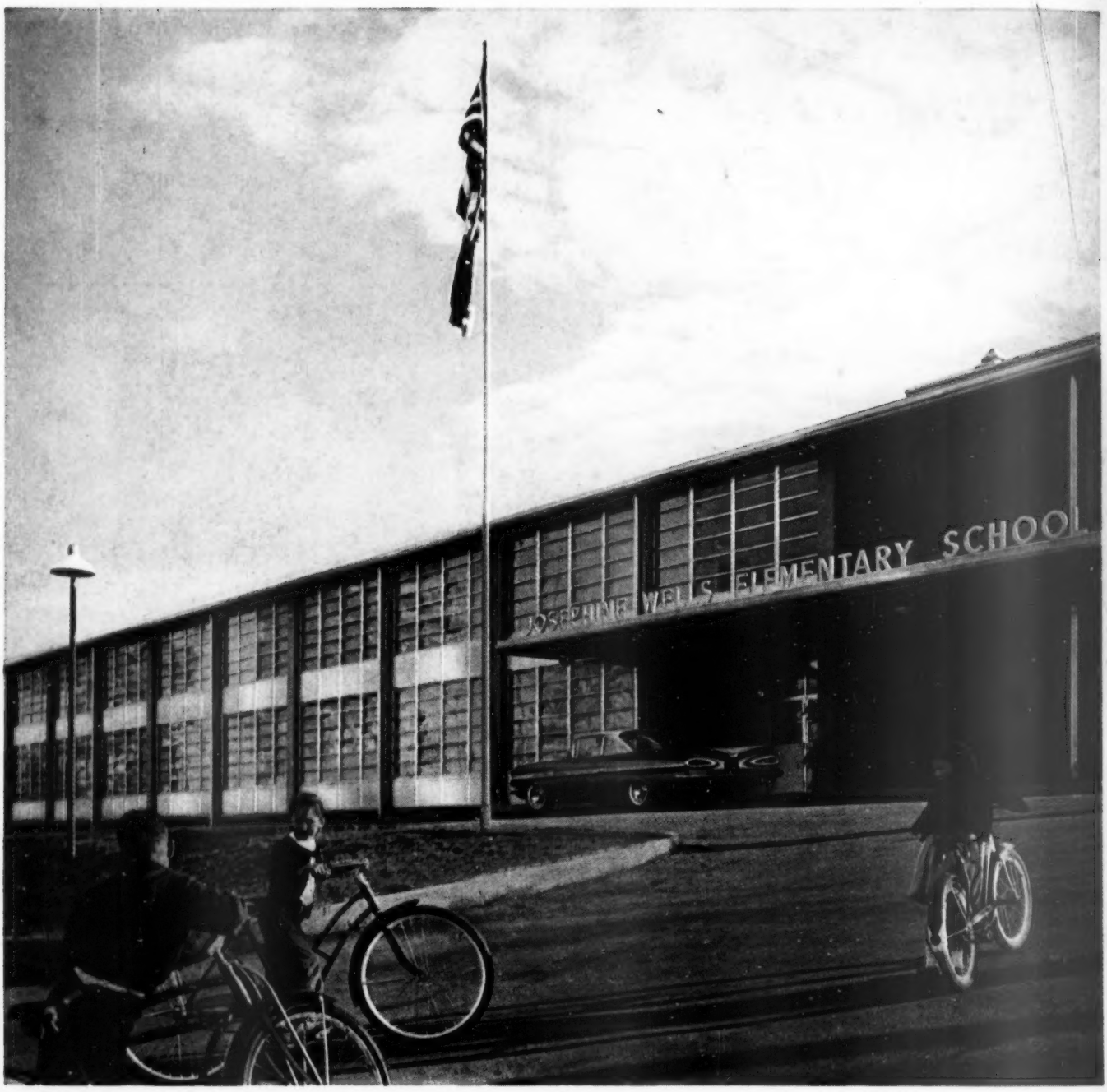
G. S. BLAKESLEE & CO.

NEW YORK • LOS ANGELES • TORONTO

Department 114-J
1844 So. Laramie Ave.
Chicago 50, Illinois

See us at the NRA Show, Booths C44 to C54.

(Circle number 708 for more information)



Latest lesson on savings with Alcoa Aluminum

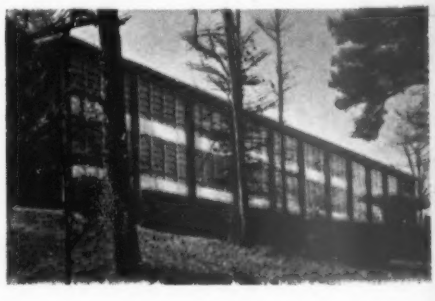
In Atlanta, Georgia, they're proud of the beautiful new Josephine Wells Elementary School . . . proud that they constructed a modern building that enhances the community at an economical price. For this, much of the credit belongs to aluminum. Window walls, windows, coping and gravel stops of lightweight, easy-to-handle Alcoa® Aluminum went up faster with less on-site labor. But this is only the beginning of Atlanta's lesson in economy. Down through the years, aluminum will continue to save taxpayers many thousands of dollars in maintenance costs. It will never need painting or expensive repairs . . . will stand up to any weather and keep the school looking bright and new.

Complete, specific information on the savings and advantages of aluminum curtain wall and other products for school construction is yours for the asking. Call your nearest Alcoa sales office. There an experienced sales engineer will help you with your school project. Aluminum Company of America, 1825-E Alcoa Building, Pittsburgh 19, Pa.

Building: Josephine Wells Elementary School, Atlanta, Ga.
Architect: A. Thomas Bradbury & Associates, Atlanta, Ga.
General Contractor: Abco Builders, Atlanta, Ga.
Aluminum Fabricator: Brown & Grist, Inc., Newport News, Va.
Aluminum Entrance: American Art Metal Company, Atlanta, Ga.

(Circle number 702 for more information)

Your Guide To The Best In Aluminum Value

ALCOA ALUMINUM
ALUMINUM COMPANY OF AMERICA

For Exciting Drama Watch "Alcoa Theatre," Alternate Mondays, NBC-TV, and "Alcoa Presents," Every Tuesday, ABC-TV